



In the name of humanity,
Koresh,
(Signed P. S. S. D.)

THE
CELLULAR COSMOGONY

... OR ...
THE EARTH A CONCAVE SPHERE

PART I
The Universology of Koreshanity
(WITH ADDENDUM: "ASTRONOMY'S FALSE FOUNDATION.")

BY KORESH
THE FOUNDER OF THE KORESHAN SYSTEM OF RELIGIO-SCIENCE; AUTHOR
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PART II
The New Geodesy

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THE FLAMING SWORD.

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¤ DEDICATION ¤

This little work is part of the skirmish line of the Army of Revolution. It shall never cease its influence until every vestige of the fallacies and evils of a perverted science and religion shall have been relegated to oblivion.

...To the...

*Firstfruits of the Resurrection,
Offspring of the Lord,
I supremely dedicate it;*

hence to all men in all grades of progress in their liberation from the thralldom to ignorance and the hells of the competitive system. —KORESH.



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Gallery of the Geodetic Survey.

Series of Tangible and Indisputable Photographic Evidences of the Facts of the Naples Air Line.

IN TURNING through this unique work the reader will find a number of photographic etchings illustrative of the Florida Geodetic Survey. These photographs will prove more satisfactory, first, because they take the reader personally, as it were, to the tangible scenes of the operations; and, second, because the testimony of a photograph is indisputable. These illustrations are to be studied in connection with the details of the remarkable demonstration of the Earth's Convexity by means of the unique survey. We desire to call special attention to the features bearing directly and specifically on the points herein maintained.

Etchings Nos. 3 and 4 show the Pocchilinatore in position at the beginning of the survey, March 18, 1897. The altitude of the straight-edged front of the water was 128 inches; let it be noticed that the beach at this point is high, it having been thrown up in connection with the building of the Naples dock. The distance of the straight-edges from the ground can be estimated by the reader by the height of the median sized gentleman photographed with the Apparatus. Another point shown in the photograph is that the three sections here pictured, are level. You may test this by means of the Gulf horizon. A ruler laid upon the picture will show the straight-edges in line with the water horizon in the west.

Etchings Nos. 5 and 6 show the position of the Apparatus on May 5, 1897, $\frac{9}{10}$ miles south of the Naples dock. Nos. 5 pictures the Staff of Operators and Members of the Visiting

and Investigating Committee. The beach at this point is very low. It will be noticed that the Apparatus is low down upon the standards, the straight-edges being no higher than the smallest child standing in front of the Apparatus. No. 6 is a fine view of the Restitution. In the same position as in No. 5, the fine line on the upper edge of the sections points a little below the horizon, through the excavation clearly shown in the picture. By reference to page 121, an enlarged view of the projection of the air line into the Gulf may be seen.

Etching No. 7 shows the Apparatus in same position as Nos. 5 and 6; the testimony of the Apparatus and the Gulf horizon, in contrast with Etching No. 4, may be observed. This corroborates the testimony of the Visiting and Investigating Committee, given at top of page 196. The horizon is in the west; the southern end of the Apparatus is lower than the northern. The view of the southern horizon over the sections of the Apparatus is shown in No. 6. This photograph, taken in connection with Etching No. 4, will give the reader tangible and indisputable evidence of the convergence of the chord and are in demonstration of our statements of the facts of the entire survey.

Etching No. 8, the beautiful photograph, also reduced from a plate of Astronomical Chart, formerly published in the Flavilang's SWORD, contains a comprehensive view of the Great Cell of the Universe, with the binocular astronomical features: The Concave Shell, and the various strata which comprise it; the location of the Heavens, the relation of the Sun, Moon, Planets, and Stars, the Cause of Day and Night, the Changes of Seasons, and the compleatment of the Atmospheres, besides accurate pictures of the seven Planets as they appear in the telescope.

THE PICTURES TAKEN YOU TO THE SCENES ON THE FIELD OF OPERATIONS.

Introduction.

THIS SCIENTIFIC volume, largely devoted to details of the execution of the practical demonstration—mechanically conducted—of the earth's concavity, is but preliminary to the most stupendous and comprehensive exposition ever projected and consummated by human intellect. Upon the assumption that the surface of the earth is convex, there has been predicated that prodigious fallacy, the Copernican system, which, according to the admission of its most enthusiastic advocates and adherents, does not contain a single positive proof of scientific accuracy.

In 1870, the Author of the Koreshan System of Universology, upon the basis of the law of comparative analogy, announced the discovery of the cosmogonic form, which he then declared to be cellular, the surface of the earth being concave, with a curvature of about eight inches to the mile. This rate of curvature would give a diameter of eight thousand, and a circumference of twenty-five thousand miles. Applying the common laws and principles of optics, with perspective foreshortening, all the phenomena of appearances in optical illusion were scientifically accounted for, and the earth optically demonstrated to be concave, although visual appearances seemed to indicate the contrary.

After twenty-seven years of almost fruitless effort to find a man capable, honest, and efficient, with capacity to comprehend the principles of foreshortening in their illusory optical influence in perspective and foreshortening, and experiencing the weight of responsibility which a knowledge of the truth imposed upon the discoverer, the suggestion urged itself that we transpose, from the domain of optical science to that of mechanical principles, the effort to enlighten the world as to cosmic form. Under such impulse, having found our man,

we urged the necessity for the application of a mechanical device by which a right-angle line could be drawn from a vertical point perpendicular to the surface of the earth. Professor U. G. Morrow has the honor of the invention by which the mechanical proof of the concavity of the earth is so absolutely demonstrated as to preclude even the possibility of a doubt of its true contour, in the mind of any person honest enough to examine without bias or prejudice, the proofs offered.

Professor Morrow has the additional honor also, of having directed the conduct of all the experiments through which the mechanical Geodetic demonstration has been carried forward to a successful geometrical and mathematical conclusion and climax,—irrefutable and overwhelming. This work, however, is but the geometrical and mathematical *confirmation* of that part of a great system having for its pediment and groundwork the cosmic structure, the form and function of which had already been enunciated. The alchemico-organic cosmos (the physical universe) is the ultimate and therefore the most outward expression of creative power. It is the language of causation manifest in the form of symbolism. Given a knowledge of this form with its function, the cause is necessarily disclosed.

Deity, if this be the term employed to designate the Supreme Source of being and activity, cannot be comprehended until the structure and function of the universe are absolutely known; hence mankind is ignorant of God until his handiwork is accurately deciphered. Yet to know God, who, though unknown by the world is not *unknowable*, is the supreme demand of all intellectual research and development.

If we accept the logical deduction of the fallacious Copernican system of astronomy, we conclude the universe to be illimitable and incomprehensible, and its cause equally so; therefore, not only would the universe be forever beyond the reach of the intellectual perspective of human aspiration and effort, but God himself would be beyond the pale of our conception, and therefore beyond our adoration.

The Koreshan Cosmogony reduces the universe to proportionate limits, and its cause within the comprehension of the human mind. It demonstrates the possibility of the attainment of man to his supreme inheritance, the ultimate dominion of the universe, thus restoring him to the acme of exaltation,—the throne of the Eternal, whence he had his origin.

Embraced in the system of which the external cosmic form is the mere outward cell, is its correspondent, the macrocosmic or Grand Man. Outwardly, this is the visible humanity in the process of development toward a perfected state, not yet approached only as it was attained to in the Lord Christ, its germinal beginning, the firstfruits of the perfected genus.

The alchemico-organic cell is definitely structured. It is the egg from which the human macrocosm attains its incubation, hence when humanity reaches its organic shape it must assume the correspondential organism. Therefore, if we know universal form as it obtains in the alchemico-organic cosmos, we can render the language of this form into that of the legitimate structure of society; for one is the pattern of the other. Its functions and activities can also be readily translated into the language of societal functions and activities. Genuine societal fellowship will finally become a structured and composite unity, evolved through the application of intellectual energy and direction. It will become the anthropomorphic counterpart of the alchemico-organic (physical) world. A knowledge of the structure and function of the alchemico-organic cosmos constitutes the basis of a structured theology which is essential to the organic unity and perpetuity of the human race.

It does not follow, because a fallacious theological system has maintained the world in a state of offensive and defensive belligerency, anarchy, and chaos, that a true knowledge of God and his relation to man and man's relations to him, is not essential to genuine human perfection and happiness. In the emphasis of the contrast, regarding the end to be attained, between the fallacious and the genuine system of cosmogony (the Coper-

nican and the Koreshan), we insist that all the labor of investigation, the time, and the wealth expended in the Copernican fallacy have no specific purpose.

Why do we care to know whether the earth moves or is stationary? If the universe be illimitable, it is equally incomprehensible. Why, then, should humanity waste its energies in the investigation of that which it has already pronounced incomprehensible, unknown, and unthinkable,—because illimitable? We sought to know the exact form of the universe, because we knew it to be the language of cause; and knowing the *effect*, we assured ourselves of the *cause*, that through conscious knowledge we might enter into and become its power. The interest of the Koreshan mind in the acquisition of universal knowledge, resides in the fact that through it we become intellectually instrumental in the organization of the social fabric, and thus acquire social and individual perfection, thence universal and individual immortality. We learn to know of the form and function of the alchemico-organic cosmos, that we may insure the construction of the organo-vital cosmic organism.

The perfection of the individual structure depends upon the perfection of the Grand Man. The perfection of the human macrocosm (the Grand Man) depends upon the application of a few fundamental principles, revolutionary and sweeping in their influence. The principles of equilibrium are as essential to the institution and perpetuity of human happiness as they are to the eternal stability of the cosmic structure, the basis of which knowledge is found in the shape of the surface of the earth as geometrically *confirmed* in the application of the Rectilineator. As the astral nucleus of the alchemico-organic cosmos is so related in form and function to the circumference containing it, as to receive the convergence of all energies and radiate them equitably to all parts of the cosmic structure, and as the heart of the vital body, the seat of the commerce of the body, is the center of collection and distribution, hence

society must be so organically structured as to be able to collect and distribute the products of nature, coupled with industry and sustained by the application of economic law. The attainment of a knowledge of this law is founded upon a knowledge of the alchemico-organic cosmos.

It is so vastly important, in view of all these facts, for the world to possess a knowledge of the contour of the earth's surface, that we devoted the work of many months to mechanical application, for the purpose of giving to the world some simple mechanical proofs of what we have known and taught for nearly thirty years. Man's knowledge of man is his knowledge of God; not man as he is in his segregate state, but as he will be when the two forms (male and female) unite in the integralism of his biunity, of which the Son of God was the archetype. The Lord was Jehovah manifest in his human perfection. To know the Lord Christ absolutely, is to be in the consciousness of Deity; and to become like him is to sit upon the throne of his glory. This knowledge is so related to the structured alchemico-organic macrocosm, that to know of the earth's concavity and its relation to universal form, is to know God; while to believe in the earth's convexity is to deny him and all his works. All that is opposed to Koreshanity is Antichrist.

KORESH,
The Founder of Koreshanity.

CHICAGO, ILLINOIS, U. S. A.,
August, 1898.

Part I.

THE

Universology of Koreshanity.

The Relations of the Physical and Anthropistic Worlds; the Perfect Man the Supreme Impulser of all Universal Activity and Motion.

BY KORESH.

KORESHANITY is universal science applied to all the concerns of practical life, involving the science of immortal life in the body. It includes the science of religion, founded upon an accurate knowledge of the structure and function of the cosmic organism. It embraces every department and phase of form and function in the universe, and is therefore UNIVERSOLOGY. It is predicated upon an absolutely demonstrated premise, a geometric figure which embraces three simple elements—the arc, chord, and radius practically applied to earth measurement by a process which determines the contour of the surface of the earth in which we dwell, and the direction of its curvation. This is not theoretical but applied geometry. This contour is found to be an upward instead of a downward curve, and thus it is diametrically opposite to the assumed convexity of the earth's surface. The world is therefore face to face with a radical astronomical revolution.

The earth is a concave sphere, the ratio of curvation being eight inches to the mile, thus giving a diameter of eight thousand, and a corresponding circumference of about twenty-five thousand miles. This fact is physi-

The Geodesy and Astronomy of the Bible.

"For the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead."—Rom. 1: 20.

"Who hath measured the waters in the hollow [concavity] of his hand, and meted out heaven with the span, and comprehended the dust of the earth in a measure, weighed the mountains in scales, and the hills in a balance?"—Isa. xl: 12.

"Where wast thou when I laid the foundations of the earth? * * Who hath laid the measures thereof? or who hath stretched the line upon it?"—Job. xxxviii: 4, 5.

"The man with a measuring line in his hand," who "stood upon a wall made by a plumb line, with a plumb-line in his hand." "He stood, and measured the earth."—Zech. ii: 1; Amos vii: 7; Hab. iii: 6.

Goethe Cursed the Copernican System.

"In whatever way or manner may have occurred this business, I must still say that I curse this modern theory of cosmogony (the Copernican system) and hope that perchance there may appear in due time some scientist of genius who will pick up courage to upset this universally disseminated delirium of lunatics."—VON GOETHE.

Copernicus on His Uncertain Hypothesis.

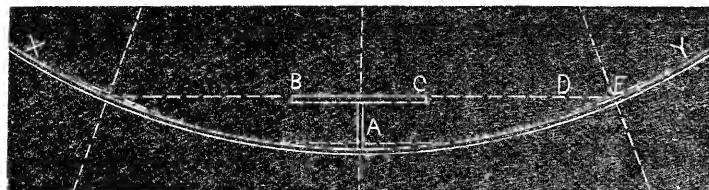
"Neither let any one, so far as hypotheses are concerned, expect anything certain from astronomy, since that science can afford nothing of the kind. The hypothesis of the terrestrial motion of the earth was nothing but an hypothesis, valuable only so far as it explained phenomena, and not to be considered with reference to absolute truth."—COPERNICUS, Founder of Modern Astronomy.

An Astronomer Admits That it Cannot be Proven.

"When we consider that the advocates of the earth's stationary position can account for and explain the celestial phenomena as accurately, to their own thinking, as we can to ours, in addition to which they have the evidences of their senses, which we have not, and Scriptures and facts in their favor, which we have not, it is not without some show of reason that they maintain the superiority of their system. Whereas, we must be content, at present, to take for granted the truth of the hypothesis of the earth's motion for one thing. We shall never, indeed, arrive at a time when we shall be able to pronounce it absolutely proved to be true. The nature of the subject excludes such a possibility. However perfect our theory may appear, in our estimation, and however satisfactorily the Newtonian hypothesis may seem to account for all celestial phenomena, yet we are here compelled to admit the astounding truth, that if our premise be disputed and our facts challenged, the whole range of astronomy does not contain the proofs of its own accuracy. Starting as this announcement may appear, it is nevertheless true; and astronomy would indeed be helpless, were it not for the implied approval of those whose authority is considered a guarantee of its truth. Should this sole refuge fail us, all our arguments, all our observations, all our boasted accuracy would be useless, and the whole science of modern astronomy must fall to the ground!"—DR. WOODHOUSE, Astronomer, Cambridge, Eng.

ally and mechanically demonstrated by placing a perpendicular post at any point on the surface of the earth, (though it were better to place it by the side of a surface of water,) and extending a straight line at right angles from this perpendicular. The line thus extended will strike the surface at any distance proportionate to the height of the vertical post.

"Hypothesis, or *guesswork*, indeed, lies at the foundation of all scientific knowledge," says the Standard Dictionary, quoting from Fiske's "Unseen World," page 3. The term science is derived from *scire*, to know; hence, science is the Latin term for knowledge. Science means



knowledge, nothing more, nothing less. That which is founded upon hypothesis (assumption) is not science, nor should it be dignified by that title. The Copernican system of astronomy has its foundation in assumption,—this is conceded by all so called scientific astronomers. The Copernican system has never been demonstrated, therefore it is not scientific.

What does Koreshanity offer as a substitute for the gigantic fallacy and farce of the benighted Copernicus? First, it offers the fact that in experiments carefully made by the Koreshan Geodetic Staff at Naples, on the Gulf coast of Florida, the contour of the earth was proven to be diametrically the reverse of what is taught as true in the

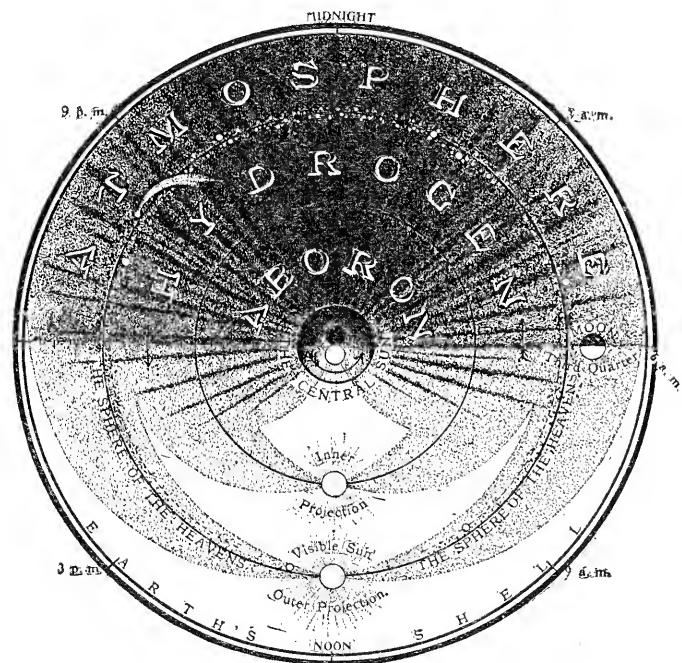
pseudo-science of modern times. The surface of the earth is not convex. It appears to be so because of optical illusion. The only geodetic survey ever made for the purpose of determining whether the surface on which we dwell is convex or concave, was made by the Geodetic Staff of the Koreshan Unity in the year 1897. In this survey was corroborated conclusively, the testimony given in 1870, that the earth is a hollow shell about eight thousand miles in diameter, and about twenty-five thousand miles in circumference.

The Form of the Universe, the Great Alchemico-Organic World.

The alchemico-organic (physical) world or universe is a shell composed of seven metallic, five mineral, and five geologic strata, with an inner habitable surface of land and water. This inner surface, as the reader already understands, is concave. The seven metallic layers or laminæ are the seven noble metals,—gold constituting the outermost rind of the shell. This shell or crust is a number of miles in thickness. Within this shell are three principal atmospheres, the first or outermost (the one in which we exist) being composed chiefly of oxygen and nitrogen; the one immediately above that is pure hydrogen, and the one above the hydrogen atmosphere we have denominated aboron. Within this is the solar electro-magnetic atmosphere, the nucleus of which is the stellar center. In and occupying these atmospheres are the sun and stars, also the reflections called the planets and the moon. The planets are mercurial discs moving by electro-magnetic impulse between the metallic laminæ or planes of the concave shell. They are seen through penetrable rays, ultra elec-

tro-magnetic, reflected or bent back in their impingement on spheres of energy regularly graduated as the stories in the heavens.

In the foregoing, is presented a descriptive outline



THE CAUSE OF DAY AND NIGHT.

Cross-Sectional View of the Gigantic, Electro-Magnetic Battery with the sun as the Perpetual Pivot and Pole. The Southern Hemisphere of the Cell.

merely, of the alchemico-organo-cosmic form. It is not assumptive. Neither is it intended, in this synopsis, to prove the Koreshan Universology; the proofs and demonstra-

tions of the System will be found in subsequent chapters of this work. In this chapter, we merely state the facts.

Motion and Function.

We have already outlined the general principles of form. We here insert this axiom: *Form is a fundamental property of existence; therefore, that which has no form has no existence. Limitation is a property of form. The universe has existence; therefore it has form, hence it has limitation.* While the above axiom partakes somewhat of the syllogistic method, it will be noticed that the objectionable feature of the syllogism is expunged; namely, the premise is not an assumption.

Motion obtains in everything throughout the cosmic form. Nothing exists without motion. The atoms of the rock are constantly changing place with all other atoms. There is circulation in the bar of steel. The angular crystal atoms of the diamond are in motion, and in their circulation and impingement they generate electro-magnetic energy of the most delicate attenuation. All these circulations are regular and according to the fixed laws of order; therefore, while form exists according to definite principles of form, the laws of motion conform to and determine the principles and arrangement of organic relation and shape.

Cause of Motion.

The cause of alchemico-organic motion is remote and proximate. Before defining the laws and principles of motion, we will here briefly state that within the alchemico-organic world (kosmos) there resides the anthropotic or corresponding kosmos. These are two discrete spheres, yet they are co-ordinately one. The alchemico-organic kosmos

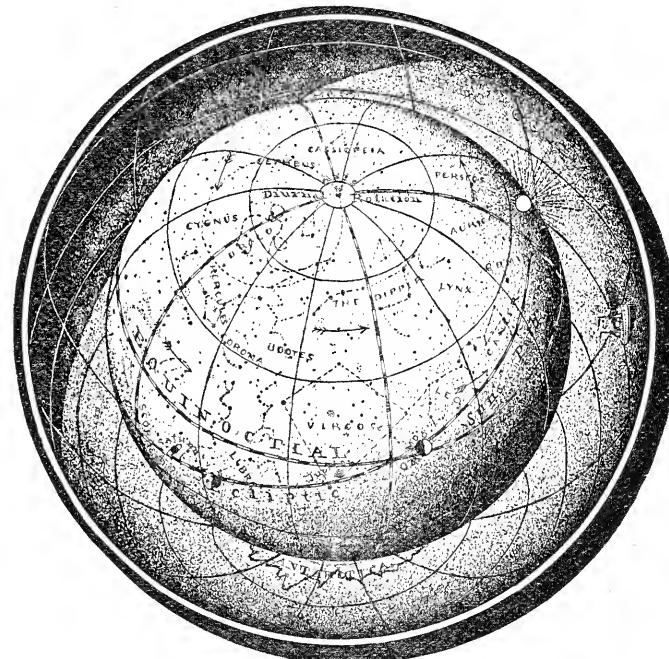
(the physical world, the outline of which is given in preceding pages) is in the form of man; that is, in the egg or shell—man in the state of un-incubation. The mass of humanity is in the same state, with this modification; the alchemico-organic kosmos is in space, and is therefore



THE EARTH'S CONCAVE SURFACE. The Land Hemisphere,

persistent ; while its anthropostic co-ordinate embodies principles which merely correspond to space, and are not persistent in any one form. For instance : The seven metallic laminæ or plates comprising the general metallic

rind of the macrocosmic shell, are perpetual. These are the seven limitations of energies radiating from the stellar nucleus primarily, and from the solar limbus as the environment of the stellar nucleus. They constitute the deposit extremities of the seven energies, or the seven



"IN THE HOLLOW OF HIS HAND."
The Heavens in the Earth.

alchemico-organic spirits of radiation. The geologic strata through which the energies radiate, are the conditions of chaos penetrated by the energies before they reach their extremities of metallic deposition and order.

The stellar nucleus is the center of space ; the metallic laminæ are at the circumference of space. Correspondentially in humanity, the Lord Christ was the stellar center, and his quality was the correspondent, in anthropostic being, of space in the alchemico-organic kosmos. In the progress of time in its relation to the development and progress of the race, the seven churches yet to be formulated into groups, are the anthropostic depositions corresponding to the seven metallic plates. The seven churches are seven qualities of human characteristic, and correspond to the seven planets, and therefore to the seven primary substratic laminæ of the cosmic crust.

By the remote cause of motion, is meant the cause primary to the electro-magnetic energy created at and radiating from the stellar nucleus, antithetically generated at the circumference of the shell and converging to the nucleus. The cellular kosmos, or the great cosmic egg previously described, constitutes a great electro-magnetic battery which is purely physical, or, as denominated in Koreshan Science, alchemico-organic. The sun and stars are focalizations of energy, merging into matter materialized through voluminous and high-tension convergence. There is, at these centers, a constant concretion and sublimation. Energy is constantly materializing, and the temporary materialization is as rapidly changed to energy and is radiated. There is, therefore, a reciprocal interchange of substance from center and circumference. The substances energized at the nucleus are radiated to the circumference and are there solidified. At the circumference, the surplus solidification is reduced again to energy and flows to the nucleus.

As there are seven metallic laminæ in the prime circum-

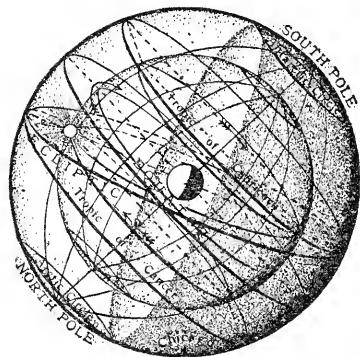
ference, so there are seven prime metallic kinds of energy flowing toward and into the stellar nucleus. As these influxes are of seven distinct characteristic vibrations, so the nucleus has seven distinct degrees of energy, all meeting at one focal point in space, there turning back upon themselves and flowing out or radiating to the circumference and depositing at the environments of the kosmos. From the mineral laminæ, geologic strata, and water surface of the universal rind, there is also a corresponding and co-ordinate inflow or convergence to the stellar nucleus.

We find in this great universal battery, however, in its electro-magnetic power, but the proximate cause of its activity and form. Thus far there is no conscious and voluntary force. Associated in co-operative being with this alchemico-organic kosmos is another half, endowed with voluntary and involuntary consciousness, co-existent and co-eternal. This voluntary and involuntary conscious existence, the acme of whose life is in the human brain, while prior and positive as to the momentum of this duplex cosmic structure, is only coincident as to its perpetuity. Neither existed prior to the other in the timic aspect of their co-ordination. The proximate cause, then, of all the motions of the alchemico-organic cosmos, is electro-magnetic energy produced reciprocally at the center and circumference of the great alchemico-organic battery, by the destruction of matter; for let it be reiterated and remembered, that energy is the result of the destruction of matter as matter, and that matter is the result of the destruction of energy as energy. In other words, an atom of matter is the materialization of energy, and energy is the dematerialization of matter. Both matter and energy are substance. It will thus be seen that energy is not therefore a mere mode

of motion or of vibration, but in reality is something in motion.

The Remote Cause of Physical Motion.

We have hinted only, in a general way, at the proximate cause of the activities in the alchemico-organic kosmos. The term *remote cause*, is here employed as being a cause remote from the electro-magnetic forces upon which immediately depend the form, motions, and phenomena of the cosmic structure outlined in the foregoing. We are now to



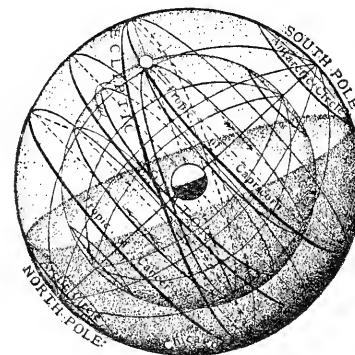
SUMMER SOLSTICE, JUNE 21.

Continuous Day at the North Pole, and Long Night within the Antarctic Circle.

consider the very central and primary cause of all motion. This cause is mental. Not only is it mental, but it is voluntary and of the will. There are two cosmic fields of form and function belonging to discrete degrees, but yet co-ordinate and interdependent. These are the alchemico-organic and the organo-vital. The first and lower is that which embraces the world as the earth, with the stars, sun, planets, atmosphere, etc.; the other, the higher, is the

vegetable, animal, human, angelic, and God kingdoms. They are both co-eternal; neither existed before the other. The organo-vital is prior as to quality, and prior also as to its positive power to create and perpetuate.

The alchemico-organic field centers in the astral nucleus as the positive pole of its electro-magnetic energy; the organo-vital centers in the Divine man, the bright and morning Star, whence originate the voluntary redemptive will and creative power. The Lord Jesus is the representative nucleus of the regenerated manhood. The Lord Christ



WINTER SOLSTICE, DEC. 21.

Continuous Day at the South Pole, and Long Night within the Arctic Circle.

at the time of his manifestation was the center of the anthropostic universe, the source of being, the point and origin of creative power.

The Cause of Motion From the Biblical and Theological Point of View.

"He is the image of the invisible God, the first-born of every creature: for by him were all things created that are in heaven, and that are in earth, visible and invisible, whether they be thrones, or

dominions, or principalities, or powers; all things were created by him, and for him: and he is before all things, and by him all things consist; and he is the head of the body, the church." Col. i: 15-18.

There can be but one question regarding the above Scriptural declaration. Is it true? It is concise, sweeping, inclusive, conclusive, and lucid. Is the Lord Jesus, the Christ of God, what he declares himself to be, and what inspired men have declared him? Is he the Son of God? And does he embody, as the primary offspring of Deity, all the attributes of the parent? And more than this; in his development from men as the Son of man, did he absorb into himself the principles, attributes, life, form, and consciousness of the parent? We hold that the Lord, as was declared of him, was the fulness of the Godhead bodily,—Father, Son, and Holy Spirit; and further, that when the Lord was visibly manifest to the outer world, his inner and spiritual life was visible to the spiritual world as the astro-biological center of that sphere, and beside him there was no God.

How could the Lord, being born an infant into the natural world only at the beginning of the age, be the cause of all things? The Lord was not only the reincarnation of Elijah (God the Lord), of Moses, of Abraham, of Noah, of Enoch, and of Adam, in a direct line, but of all who died looking to his coming as the Messiah and Son of God in the indirect lines of reincarnation. He gathered into himself the spirits of the past. He was also the pole of influx from the heavenly worlds, and constituted the rolling together of the heavens as a scroll. He was the Word infolded and sealed. "Him hath God the Father sealed."

Twenty-four thousand years before the beginning of the Christian age, conditions in the world were the same as then. God was manifest in the flesh, and the Lord of the

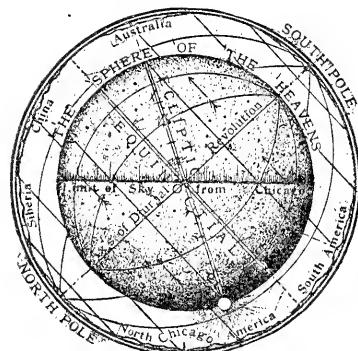
Christian Era was identical with the Adamic personality in the beginning of the 24,000-year cycle. The end and beginning of every grand zodiacal cycle bring into visible and personal manifestation the Son of God, who is Father, Mother, and Son. He, the Lord, was the individual or undivided man. He held within himself the bride, for "He who hath the bride is the bridegroom." He was the biune, the two-in-one, the parent of himself and also of the sons of God. As the parent of himself, High Father, he was Abram; as the Father of the sons of God, he was and is Abraham. He being the very primate cause of all things, and possessing both the voluntary and involuntary power of creative being, it is seen that the cause of all things resides in voluntary mental energy, supplemented by the involuntary reflex of voluntary mental activity.

The Precession of the Equinoxes as Related to the Astro-biological Manifestations.

When the ordinary "scientist" alludes to the precession of the equinoxes, he has reference merely to the sun's precessional movement; but every planet passes through a corresponding precession. The sun's precessional year is 24,000 years long. The precessional years of the planets are correspondingly longer, proportioned to the difference in their ordinary years. These precessional years constitute cycles of time that are definite and recurrent, and proportionate to the great complex, solar, lunar, planetary, and stellar precessions. The movements in the alchemico-organic sphere have an astro-biological correspondence. The signs in the physical heavens mark definitely the manifestations which correspond to them in the astro-biologic field. Every 24,000 years, there is a similar personal man-

ifestation as the one constituting the beginning of the Christian era. Every 24,000 years, there is such a manifestation as is now about to occur.

We are now approaching a great biologic conflagration. Thousands of people will dematerialize, through a biological electro-magnetic vibration. This will be brought about through the direction of one mind, the only one who has a knowledge of the law of this bio-alchemical transmutation. The change will be accomplished through the formation of



Actual Position of the Universe and Tilt of Poles From Chicago.

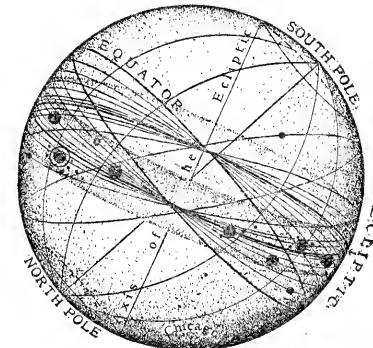
a biological battery, the laws of which are known only to one man. This man is Elijah the prophet, ordained of God, the Shepherd of the Gentiles and the central reincarnation of the ages. From this conflagration will spring the sons of God, the biune offspring of the Lord Jesus, the Christ and Son of God.

Transposition of Mental Force to Alchemico-Organic (Physical) Energy.

When a man (the man) so understands the laws of life

as to know their application, and through obedience to law overcomes the sensual tendencies of his nature, he reaches the point of biologic absorption. The visible and tangible dematerializes, and the outer consciousness enters into unity and blends with the inner and spiritual. The visible man consumes and thus enters, by transabsorption, into the unity of the invisible Godhead, and, by descent, into the church prepared to receive the precipitate afflatus.

In the process of the dissolution of the visible structure,



Zodiac and Orbita of Planetary Disci in the Earth's Shell.

by which the matter of the tangible organism is dissolved, consumed, and reduced to spiritual energy—called the Holy Ghost or Spirit,—the substances (oxygen, hydrogen, nitrogen, carbon, sulphur, phosphorus, fluorine, chlorine, sodium, calcium, potassium, magnesium, cuprum, aluminum, iron, etc.) contained in the organic structure, together with the atmosphere and the free energies of space, enter the vortex of vibration, which consumes the body. The consciousness of the man entering thus into the whirlpool of organic dissolution is not obliterated, but infolds by conjunctive unity

with the central and interior mind around which the outer consciousness had wrapped itself. This interior mind constitutes the very central consciousness of Deity, the heart of the anthro-biologic kosmos. Radiating from this afferent absorption, the gravic spirit in its efferent distribution baptizes such minds as are prepared to receive the divine overshadowing, called the Spirit. Every overshadowing of the primary seven successive baptisms proceeds directly, not from an invisible "oversoul," but from the tangible personality. The Holy Ghost shed upon the world (the church) in the beginning of the age, proceeded from the visible Lord in his conversion from matter to spirit. If the Lord had not been personal, there could not have obtained the dissolution of his body and its conversion to Holy Spirit; and therefore the *afflatus*—the "oversoul"—could not have obtained. But the vortical involution, the anthropostic, took place in alchemico-organic (physical) space; therefore it involved the material elements not included in the organo-vital structure, and the vibrations were communicated to the elements and essences of the alchemico-organic kosmos, converging toward and into the stellar nucleus of the alchemico-organic world, and radiating to its circumferences. It is thus that the conscious mental nucleus of the anthropostic, imparts momentum to the activities of what has been denominated the physical universe. The impulse ceases to be mental energy so soon as the influence of correlation has mutated the vibration of mental force to the vibration of alchemico-organic (physical) motion.

We do not employ the term vibration as it is usually employed in common psychical or physical "science;" with us, vibration signifies not merely motion imparted to atoms

or essences, but the dissolving of molecules and atoms, and their conversion to energy in the various degrees, and *vice versa*. It is thus observed that a reciprocal relation exists between the anthro-biologic (organo-vital) and the alchemico-organic worlds, and that the electro-magnetic energies active in the latter are the result of a continuous, primary, voluntary mental energy generated in the human mind, dependent on the material basis (brains); these two co-ordinate fields of operation being co-eternal.

Laws of Motion of Planetary Disci in the Shell or Firmament of the Universe.

There are seven primary, movable, mercurial disci floating between the metallic plates or *laminæ*. The momentum is imparted through the operation of the actinic radiations from the astral nucleus, projected through the solar influence. These radiations penetrate the geologic, mineral, and metallic strata. As the sun radiates its forces in the form of a cone, the apex of which is at the solar center, and the base at the metallic strata, the impression made upon the strata is in the form of a circular area. There is an impression of the alternate influence of caloric and crūosic energy, the one expansile, the other contractile. This movement follows the rotation of solar motion, therefore there is necessarily a peristaltic or vermicular motion imparted to the metallic plates or *laminæ*.

The alternate action of the actinic radiations of calorine and crūosine produces discular vacui between the plates, which are filled with mercurial amalgam. These act as reflectors, throwing back into the heavens the forms of the disci against the atmospheres, so that in looking toward the heavens we behold these disci through the operation of the

laws of reflection, and are thus enabled to comprehend how the Lord "spreadeth out the heavens * * * as a molten looking-glass."

Why is it Necessary to Know the Form of the Universe?

A knowledge of the structural form and function of the alchemico-organic (physical) kosmos, is the key to our knowledge of the principles which must govern the organization of society in the culminating kingdom of righteousness. The importance of a knowledge of universal form and function, as pertaining to the alchemico-organic kosmos, will be admitted when the mind is sufficiently amplified to comprehend the relationship of the alchemico-organic macrocosm to the organo-vital macrocosm (the Grand Man), as pertaining to and comprising the universal mass of human existence.

The individual (undivided) man (such a man was the Lord) is the archetype of creation. What he was in the least form, the alchemico-organic world is in its greatest form; and what he was in that form, so also is the final Theocratic kingdom in the earth, namely, in the form and function of the man. Therefore, we discover that the true interpretation of the alchemico-organic kosmos is the revelation of the mysteries of Deity; for as the outward and most material structure is but the expressed thought of the voluntary and involuntary mental cause producing it, so a knowledge of this expressed and manifest language reveals the history of human origin and destiny.

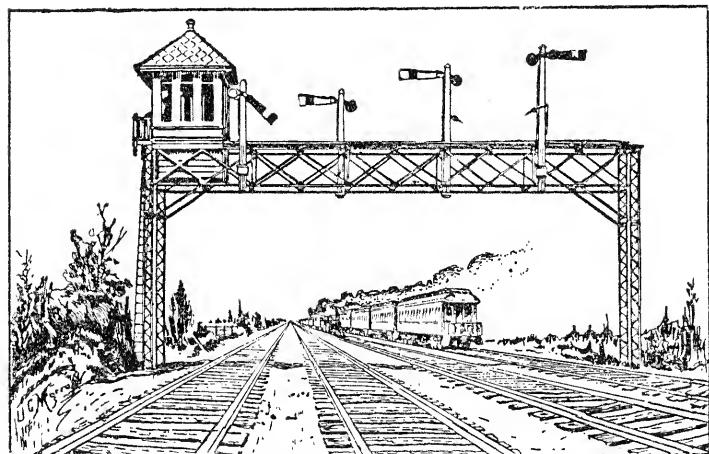
Optical Factors and Illusions.

Positive Proofs of Koreshan Cosmogony Contrasted with the Assumptions of the Old School.

IT IS ASSUMED by those who profess to believe in and advocate the Copernican system of astronomy, that the earth is convex because it appears so from optical observation. A person standing upon a tower and looking out in every direction will see the vanishing point at an equal distance, and the horizon (the limit of geolinear vision) describes a circle around this center of observation. This fact in appearance is taken as an assumption of the earth's convexity, because it is claimed that nothing but a globe would thus respond to and impress itself upon the organs of vision. We maintain that an assumption predicated upon an optical illusion, is not sufficient ground for the establishment of a rational conviction. If the earth were a perfectly flat surface extended illimitably, an observation from a tower looking out in every direction would assume, to the eye, the appearance of a circular horizon, for the simple reason that geolinear foreshortening would provide for a vanishing point at a given distance from the observer, proportionate to the elevation of the point from which the observation is taken.

If a person will stand upon a railroad track equidistant between two rails, the rails will seem to approach each other in the distance, the apparent contact, or vanishing point, being proportioned to the space between the rails and the height of observation. If they are five feet apart, the vanishing point is less than if they were six or seven

feet apart. Suppose we take a geolinear extense on the surface of the earth as one rail, and an imaginary line through the air as the other, placing the eye two and one half feet from the earth's surface. Now, the same law obtains in looking parallel along this surface, as in looking parallel to the rail and along its side. Making our observation by the side of the rail, the vanishing point is reached and the rail disappears, although extended in a straight



The Illusions of Perspective.

line far beyond the vanishing point. The line over which observation is taken along the surface of the earth is the geolinear extense; it corresponds to the rail, and disappears by the same law; namely, that of foreshortening.

The Vanishing Ship's Hull.

The phenomenon of the disappearance of a ship, hull first, as it recedes from view, is caused by the same law of

foreshortening as that which governs the disappearance of the rail, or causes the two rails to appear to approach each other. If we should make calculations on the basis of the *appearance* instead of on the basis of the *fact* that the rails do not approach but only seem to, we necessarily draw false conclusions. This is precisely what the astronomers do. They conclude from appearances rather than from facts. A balloon six or seven miles distant, appearing about the size of a pin head, if it be sixty feet in diameter, occupies as much space in the distance as when near the subjective point of observation. The law by which the balloon appears to diminish in size as it recedes from view, is the same as that which produces geolinear foreshortening, or which makes the surface of the earth diminish longitudinally as extending from the point of observation. This phenomenon belongs to the organ of vision, and cannot be comprehended only as we possess a correct knowledge of the laws and phenomena of optics. Owing to this fact, the student cannot comprehend the principles involved in the phenomena of optical appearances and illusion, without a thorough comprehension of the principles and laws of optics.

In another part of this volume, the reader will find a complete record of the mechanical apparatus and processes by which we have so absolutely demonstrated the concavity of the earth as to overshadow the fallacious conclusions of the mountebanks,—Copernicus, *et al*, and their deluded followers. We place a brief study of optics before the reader, merely to show wherein the fallacious conclusions of modern, so called science, while conflicting with the discovered and projected truth, are drawn not from facts but from appearances.

The Laws of Visual Impression.

It might appear, as we proclaim the fact that a thorough knowledge of the Koreshan Cosmogony demands a thorough knowledge of optics, that it is our purpose to set forth a complete optical treatise preparatory to an understanding of the Koreshan Cosmogony. A thorough knowledge of Koreshanity must necessarily be a question of growth. A slight knowledge of the laws of optics will enable the student to see the discrepancies of modern astronomy, as predicated upon a misinterpretation of appearances. What we behold through the organs of vision, depends entirely upon the imprint of objectivities upon the retina of the eye. What we see, is merely a picture placed upon the lining coat of the eyeball, and thence carried through the optic nerve, optic commissure, and optic tract, to that cortical area upon which the final function of vision depends.

We subjoin a diagram setting forth some of the correlated facts of vision. The reader's attention is again called to the explicit study of the effects of subjective impression, or the imprint or picturing of the objective world upon the retinal coat. See retinal coat in Diagram 1, Plate 1, with the area *bb* as the film upon which the imprint is laid. The picture upon the retina includes whatsoever is embraced in the obtuse between the two lines 1, 2, 3, 4; *aa* is the optical axis, *d* is the point of the appearance of the ship when the hull vanishes, as it recedes from view, as observed from the subjective *x*. The dotted lines indicate the appearance of the actual lines 1, 2, 3, 4, while *d* is the apparent position of the ship observed from *x* (the subjective point), and *c*, the ship as it actually is, viewed from its location in fact, not in appearance as at *d*. The per-

pendicular space 1, 1, implants the picture *fh*; the space 2, 2, implants the picture *eg*. It will be noticed that the picture imprinted from 2, 2, at *eg*, is shorter than the one imprinted from 1, 1, at *fh*, proportionately as the distance from 1, 1, to 2, 2, in the objective. It follows that if a picture is imprinted from 3, 3, at *bb*, the ratio of shortening at *bb* will correspond to the imprints 1, 1 and 2, 2. If lines were drawn from the points 4, 4 to the film *bb*, through the focus at *B*, the subtense of the angle from 4, 4 to *B* would be so acute as to obliterate the space at the center of the film *bb*. The point of obliteration at the film or retina, *bb*, corresponds to the vanishing point in the objective at *d*. At *d* the hull of the ship disappears, because there is no longer room for the picture upon the retina.

The lower line 1, 2, 3, 4 is the geolinear extense; the line upon the ground appearing at *d*, the vanishing point and the horizon. The upper line may represent a cloud covering the sky. The two points 4, 4, appear to join at *d* because of the distal foreshortening, which it must be remembered is merely the result of changes upon the retina, effected by distance. Any object beyond the ship *c*, as seen at *d*, will settle out of sight on the geolinear surface, proportionately to its distance beyond 4, 4. By comparing the spaces *ww* with the spaces *yy*, it can readily be seen how, the area of a given space appears to shorten, and narrows itself upon the retinal coat. Now if we remove the upper line 1, 2, 3, 4 and open up the space above, an object at *P* may imprint itself upon the retina; but an object at *Q* could not be seen because it is below the ground surface, which, though it might extend a thousand miles in a straight line, can make no further imprint upon the retina because the

space between the lower line 4 and *d* is the obliterated space, as effecting the retinal film.

We have presented some optical facts upon which depend the appearances upon which rest the fallacies of the Copernican system; facts, a want of the understanding of which places the so called scientists in the catalogue of the incompetents, which graces the contradictory systems of astronomy that arise spontaneously, subserve their purpose, and die the death of the fallacious in the various careers of mental transformation, as the human mind gropes its way in darkness.

Koreshan Geodetic Service.

Outline of Principles of Accurate Measurement of the Earth's Contour.

GEOODESY is the application of mechanical and other means for the purpose of determining measurements of the earth's surface, including not only that of its general contour as to whether it is concave, flat, or convex, but also of demonstrating the amount of curvation at any given point and in any given direction.

The Copernican system of astronomy *assumes* that the earth's surface is convex, and upon this *assumption* the fallacious system has been fabricated. No astronomer has ever yet presented any proof of the Copernican system; and one of the persistent efforts of the modern physicist is to find some irrefragable proof of what every so called astronomical scientist knows to be merely an assumption.

The Koreshan System of astronomy is in direct opposition to the Copernican system, and unlike the Copernican system it is founded, not upon an assumption, but rather upon a premise so absolutely within the sphere of mechanical demonstration as to place it beyond and out of the uncertainty of mere postulation, which we assert to be the basis of so called, modern science.

Horizontal Rectilineation.

Heretofore, the common method of attempting the determination of a straight horizontal line has been by the use of the engineer's level. There are a number of optical factors not taken into consideration by the geodetic surveyor and civil engineer, which render it impossible to extend a horizontal rectiline by the aid of optical instruments. The engineer's level is an instrument used by the surveyor, and includes a level and small telescope usually placed on the top of a tripod. This is more especially employed for the measurement of angles.

It is a fact not generally known, that it is impossible to determine a horizontal rectiline with a leveling instrument, or by the unaided eye, along the apex of successive heights of a given elevation, or along a continuously extended surface. The scientific reason for this impossibility resides in the fact that in the determination of a horizontal or lateral rectiline, an impression made upon the retina of the eye by a picture from one side of a visual direction must be counterbalanced by an equal picture on the opposite side, and the geodetic engineer, not being acquainted with this law of obtension in optics, extends a *curved* line while he believes he is continuing a rectiline.

Two men of different heights cannot, while adjusting

the tripod to accommodate the difference, extend a line of the same curvation. A civil engineer six feet tall—adjusting his tripod to conform to his height—will make a curved line, by the aid of his instrument, upward of a given curvation, while the man five feet six inches tall, adjusting his tripod to suit his height, will determine the curvation of a lesser curve proportionably to the difference in height of the adjustment. The scientific cause for this discrepancy resides in the optical illusion referred to above, namely, that on one side of the visual line there are two factors entering into the formation of a picture on the retina, as follows: The perpendicular post producing the effect of retinal impression, is shortened or elongated proportionably to the distance of the object in perspective; and in addition to this, the geolinear foreshortening (the line along the earth's surface) induces a corresponding effect upon the retinal membrane. We confront, then, two kinds of foreshortening—the one geolinear, the other perpendicular—in all geodetic observations; and an optical phenomenon which should be attributed to the principle of perspective foreshortening is ignorantly attributed to curvation.

To obviate the introduction of optical science and the necessity for the explanation of optical illusions and intricate phenomena incomprehensible to the ordinary mind, we have instituted a simple mechanical device by which a rectiline can be determined. (See cut No. 2, Plate 1.)

Perpendicular standards are placed at points where there is a quiet expanse of water large enough in area to extend a line six, seven, or more miles. Across these perpendicular standards the horizontal bar of the Rectilineator is adjusted. From this first adjustment the rectiline is extended in both directions, until the line meets the

water at a distance proportionate to the height of the perpendicular standard. By this operation we extend a chord from the top of the uprights, at right angles to two points at the surface of the water, as in cut No. 4, Plate 1. The relation of the straight line to arc determines the concavity of the earth as its true contour.

In diagram No. 3, Plate 1, we have an illustration of the optical effect of an observation made with a leveling instrument, which does not differ in principle from a corresponding observation made with the unaided eye. The straight surface over which the line of observation extends, is represented by AAA; BBB is the visual direction deviating in a gradual curve away from the straight line AAA. The mind is unconscious of this curvation of vision, hence the curved line appears to be straight, as in the dotted line ccc, while the straight line AAA appears to rise gradually as the line DDD. The point 1 in the line of vision, appears to be at the point 2. The vanishing point is where the extremity of the visual line at 1 seems to meet the line AAA, represented by the line DDD. Beyond this point, the straight line AAA, appearing as the line DDD, seems to convex away from the apparent line DDD. This optical phenomenon, which is an illusion, is taken as a demonstration of the convexity of the earth, and made the basis of the illusory system of Copernican astronomy.

In the observation illustrated by diagram No. 3, Plate 1, we prove that a straight surface curves away from the line of vision, by the identical argument employed to prove the convexity of the earth. We can prove that a straight line bends four different ways, by the same argument used to sustain the convex theory of the earth.

Geodetic Survey Revolutionized.

Revolution in astronomy implies revolution in all things. The great Swedish Seer said: "Every dispensation proceeds as from an egg." We reiterate, that a scientific religion which must embrace scientific social organization, will proceed from an astronomical basis, the foundation of which is the Cellular Cosmogony. Life develops in the cell. The next * critical work for the Koreshan Unity, is the demonstration to the world of the concavity of the surface of the earth. When the world is forced to accept this proposition, all else follows readily.

In connection with the establishment of the fact, in the public mind, of the concavity of the surface of the earth, and next also in importance, is the determination of the amplitude of the arc or the radius of its curvature. This cannot be determined accurately by any process of surface triangulation, because there are too many factors entering into the process to insure accuracy.

The Rectilineator, extending its line from any given height of a prime vertical, approaches the normal curve of the surface at a proportionate ratio, which may be determined at any given point by two exact methods,—each acting as the verifier of the other. Place a perpendicular at the requisite height, about six feet, more or less, and place the initial section of the rectilineal bar, adjusted at right angles. The points selected should be as nearly level as possible. After the extension of the line three or four miles, even less than this will answer, adjust the geodetic level. This is an instrument having two graduated glass

* Written and published in THE FLAMING SWORD, Nov., 1896, before the beginning of the Florida Geodetic Survey, in 1897.

perpendiculars very minutely spaced, with microscopes adjusted to the graduated side of the glass tubes. These two perpendicular graduates are united by a connecting tube twelve or fourteen feet long. (The tube and graduates contain mercury.)

The amount of variation of the mercury in the graduates, with the connecting tube arranged parallel with the rectiline of the section bars at any point, will indicate the degree of curvature. The instrument must be perfect; this accomplished, the determination of the radius of curvation is most simple. This instrument may be verified by the use of another instrument adjusted to the section bars with a perpendicular rod, to which is adjusted a very slender plumb-line. Across the bottom of the rod, which has a flat surface, is a minutely divided scale, to which is also adjusted the microscope. The scale has a definite number of divisions to the inch. This will determine the amount of variation from the prime vertical; namely, the first perpendicular. The deviation from the normal will increase either from the prime vertical, as the line extends, or toward it, according to the direction of curvation.

This method of mensuration determines both the direction of the curve and the radius of curvature. Any portion of the surface of the earth can be a thousand-fold more accurately surveyed by this method, than by any process ever yet instituted. We know that the result will compel the world to acknowledge the Koreshan System of Cosmogony.

Part II.

The New Geodesy.

The Question of the Earth's Shape Pivoted Upon a Specific Proposition.

BY PROF. U. G. MORROW.

First, the astronomer has to determine the figure of the earth on which he lives and from which his observations are made.—Proctor.

No accurate measurements can be obtained of the distance and magnitude of the heavenly bodies, nor any exact determination of their movements, without a true knowledge of the exact figure of the earth ; and hence is derived a powerful motive for ascertaining this element with all possible precision.—Olmstead.

IN THE promulgation of the Koreshan System of Astronomy, the discussion of the figure of the earth is revived ; in fact, the solution of the problem of the earth's shape constitutes the foundation of the Cellular Cosmogony. It is obvious that in the construction of the true system of astronomy, there should first be ascertained what are the fundamental principles of the relation of the earth to the orbs and stars above us ; some well-established basic fact directly related to the configuration of the earth's surface, must be taken as a premise. Once such a premise is demonstrated mathematically, geometrically, and mechanically, and the figure of the earth determined, a scientific foundation is laid for a system of the true relations of universal fact and phenomena. In this, the methods pursued in Koreshan Science, and the conclusions reached therefrom are revolutionary.

It is well known to those familiar with the history of astronomy, that the present popular system was not developed from a series of demonstrated premises. The conclusion that the earth is a convex body, was reached through the illusion of the sense of vision ; the heavens were conceived to be a concave, star-strewn sphere because they appear to be so, to which every part of the earth was exposed ; and the question seemed to be settled when the earth was circumnavigated. But there were no direct demonstrations of the earth's shape, nor definite calculations of the extent of its surface. Attempts at geodetic surveys were few and wholly inadequate to determine the form and dimension of the earth; measurements of meridian arcs were not made with the view to ascertaining the true configuration of the earth's surface, but for geographical purposes, and were attempted upon the *assumed premise*—the preconceived idea that the surface upon which we live is convex. Centuries elapsed between the time of the conception of the idea of the convexity of the earth and any endeavor to prove it so ; and it was not until the present century that any endeavor was made to demonstrate the mobility of the earth.

A False Premise Leads to Absurd Conclusions.

From the time of its inception, the theory of the earth's convexity has directed the course of scientific investigation, rather than to have been supported by specific demonstration. It has been the origin of fallacious theories of light, heat, and motion; of erroneous conceptions of the laws of physics, optics, and natural philosophy, and has led to a false foundation for modern geodetic operations and survey. All the scientific instruments of today employed in astro-

nomical and geodetic research, are constructed to conform to the earth's assumed convexity, and to the idea conceived centuries ago, that a ray of light is rectilinear and vision virtually illimitable. These instruments, the methods of use of which are the result of a false premise, are now employed in the endeavor to verify and prove the premise upon which their construction has depended!

Being evolved from hypotheses, the popular system can only assume its probability, and must acknowledge its uncertainty. It would be foolish in the development of a new system of science, to employ the methods which we now see have resulted in a scientific jargon. In presenting to the world the Koreshan System of Astronomy, we are not in ignorance of the conditions which we confront; we are familiar with all the phenomena that are claimed to be corroborative of the prevailing theory; and it is only by reason of the discovery of those facts, principles, and laws which demonstrate the true form of the earth, and which lead to a correct interpretation of what we see, that the Koreshan Scientist is warranted in the endeavor to revolutionize the scientific world.

We might quibble for a century about the relative merits of the Koreshan and Copernican systems of astronomy, without reaping any practical benefits or reaching a common ground of agreement; for between the two systems there is no harmony. The question must be settled by actual tests and experiments; and such tests must be simple, absolute, and devoid of complications; they must not embrace principles that are subject to dispute. It is only when such demonstrations are made and such tests applied, that a premise of conclusion can be found which will be in harmony with all other facts ascertained by equally rigorous methods.

The Fairness of Our Propositions.

We believe we are placing ourselves in an attitude of fairness—as fairly as we know how to be. Our only object in the promulgation of the Koreshan System of Science and Cult, is to have others share in the appreciation and benefits of such principles, facts, and laws as have been discovered by the illustrious Founder of the Koreshan System, in advance of others who are spending their lives in the endeavor to develop the great field of science.

Above all others, those who have come to realize the existence of difficulties and problems unsolved in the popular systems, should be the ones most desirous to have them solved; but we are candid when we say that we believe that continuing along the usual lines of research will not lead to a solution of the great questions before us. We therefore offer to the world a new method of determination of the contour of the earth. If we are right, we can solve the difficulties which now confront the scientific world; if we are wrong, then we must leave the problems as we first found them—still unsolved.

It is the object of our efforts at present to invite the attention of the scientific men of the world—astronomers, mathematicians, surveyors, and engineers, to the Cosmogonical System of Koreshan Science—not merely to the study of the system from our presentation, but from actual test of its premises; for to the usual scientific mind, our astronomical system, though a marvel of completeness, has the appearance of absurdity, because it occupies the position of antithesis to all modern concepts.

The first objection usually urged against the Cellular Cosmogony, is the apparent absurdity of endeavoring to

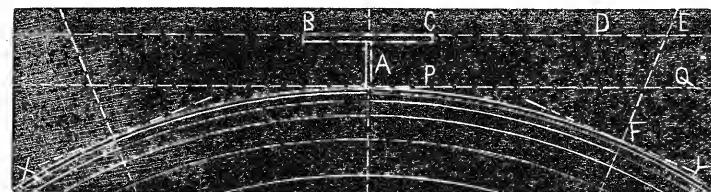
place all the "heavenly bodies" within the compass of a hollow sphere 8,000 miles in diameter. Our premises should not be judged by conceptions founded upon other and unproven premises, but by scientific tests of the premises themselves. If our premises be true and the earth is concave, the logical mind must admit that all perpendiculars would converge to one center, and that the distance and magnitude of the sun, moon, and stars would have to be calculated from the concave basis.

We are familiar with the difficulties encountered in ordinary survey and engineering; even Government survey and geodetic operations are not without inaccuracies; many things conspire to render the measurement of meridian arcs extremely difficult. The variations of the compass, refraction and incurvation of light and vision modify results of survey; and, moreover, the principles and laws of perspective not taken into account in field work,—nor in any of the propositions and experiments whereby the size of the earth is thought to be indicated, the laws of which the physicists have not as yet clearly defined,—are factors which, if applied, would lead to different conclusions from those arrived at from the usual methods of procedure. It is because of this that we insist upon the employment of newly-discovered means of applying simple and absolute tests of the contour of the earth's surface.

Is the True Level, Extended as an Air-Line, Tangent or Convergent to the Water's Surface?

It is obvious that if the earth were convex, a horizontal line, representing the true level at any given point on the water's surface at right angles to the perpendicular, extended as an *air-line*, could never come in contact with

the surface, but would be *tangent* to it. This is self-evident. The relations of the perpendicular, the arc, and the tangent are shown in the accompanying diagram. Let XY represent the arc of convexity 10 miles in length. A, a perpendicular, the vertical point of which is 6 feet from the surface; BC, a horizontal straight-edge 15 feet in length, and D, the extension of the horizontal line BC. It is clear that the distance from the extended horizontal to the water's surface would increase continually at the rate of 8 inches per mile, or the square of the distance in miles multiplied by 8 inches. EF is a line connecting the tangent and the water at a distance of 3 miles, while PQ is a parallel

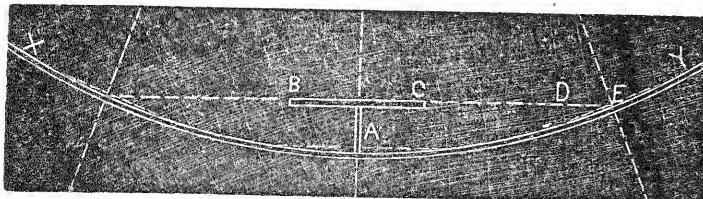


tangent beginning at the apex of the arc. In 3 miles the declination of the water's surface from PQ is 72 inches, or 6 feet; therefore, the length of the line EF is the amount of the declination, plus the distance from BD to PQ, which equals 12 feet. If the air-line be extended in the opposite direction the result is the same.

If the earth curvates *concavely* at the rate of 8 inches per mile, it is evident that the air-line would be convergent to the water, as represented in the diagram on the following page. Let XY represent the concave arc 10 miles in length. A, a perpendicular support, the top of which is 6 feet above the water; BC, a horizontal straight-edge 15 feet in length, and D, the extension of the horizontal line BC.

E represents the point where the extended air-line comes in contact with the water's surface. The distance along the line of the surface, from the upright support to the contact point, is about 3 miles. The cosine of the air-line completes the chord, the extremities of which converge to the water equidistant from the perpendicular, being oblique to the horizontals at points of contact.

Every surveyor and engineer will admit that the above is a fair statement of the relations that would exist between the perpendicular, the air-line, and the curvating surface, if the earth were convex; the principles and laws of hydrostatics would make it inevitable. Indeed, all



standard works on surveying and leveling insist that such would be the necessary consequences, as the following from the *Encyclopædia Britannica*:

A line drawn at right angles, crossing the plumb-line (or vertical), and touching the earth's surface, is a true level only in that particular spot; but if the line which crosses the plumb be continued for any considerable length, it will rise above the surface, and the apparent level will be above the true one.

It is equally true that if the earth is *concave*, the extension of the true level at any point on the water's surface, as an absolute air-line, would inevitably and invariably terminate as a line *converging* with the water's surface; and hence if such a line be extended, and it should converge to the surface of the water, it would be an absolute demon-



The Sloop Ada.

In service of the Koreshan Geodetic Expedition on the Gulf of Mexico.

Etching No. 1.

stration of the earth's concavity. This, plainly stated, is the premise of the Koreshan System—it is the premise upon which it will stand against all opposition!

If the scientific men today are as willing to test the truth of our propositions as we are to meet them in demonstration of our premise, no difficulty whatever will be experienced in speedily settling the question. We hereby extend to them the opportunity of demonstrating the earth's convexity and to destroy our premises, or to establish the basis of the Koreshan Cosmogony and thus overthrow all the conclusions of modern science. In this we are not clamoring for dispute, but inviting an impartial test of the facts.

There is not another issue before the world today, in which the principles can be so specifically stated, focalized, and pivoted upon one point of test, nor so susceptible of absolute decision, as this one concerning the concavity of the earth; because the contour of the water's surface cannot be changed, and no method of solving the question is so obviously certain as the one formulated in the Koreshan System, and now proposed to the world.

Modern Geodetic Operations.

The evidence that the earth is round (convex) is but cumulative and circumstantial; scores of phenomena ask separately and independently, What other explanation can be imagined except the sphericity (convexity) of the earth?—Prof. De Morgan, Secretary English Royal Astronomical Society.

THAT the earth is convex, there has never been any direct and positive evidence offered; the most eminent astronomers are unable to place the matter within the range of certainty. It seems that they should have settled this question long ago, but the direct demonstrations have not been forth-

coming; many things pertaining to the science of geodesy are baffling the skill of the modern scientific mind. Some missing link needs to be supplied; some absolute fact needs to be introduced into the field of geodetic operations before the problem is actually, practically, and absolutely solved.

We maintain that the scientific world today has not put forth a single effort, or at least has not succeeded in making any satisfactory demonstration of the earth's true form. The Koreshan System alone has been able to reduce the question of the earth's shape to a specific and pivotal demonstration. Involving the true principles of universal form, it is able to utilize every known fact of cosmic phenomena as corroborative of the earth's concavity. It rejects no truth; endeavors to set aside no well-established and demonstrated fact, and does not fear the most crucial tests of its premise.

The Usual Facts and Phenomena Used in Modern Astronomy Prove the Rotundity, But Not the Convexity of the Earth.

It has been the effort of the men engaged in the scientific field for the past century, to reduce the "cumulative and circumstantial evidence" of the earth's convexity to some systematic arrangement, rather than to ascertain definitely and exactly the contour of the earth. The popular system was developed gradually, but, Proctor says, "not in any systematic or orderly sequence." The disorderly development of the system has necessarily resulted in the perversion of the true principles, and consequently the hypotheses and conclusions held forth in the modern scientific world are the exact reverse of the true system. For this reason all of the usual facts presented in favor of the earth's *rotundity* really do not prove that we live on its *exterior surface*, but indicate,

when considered for what they are really worth to the popular system, nothing but the fact that the earth is round. After that conclusion is reached, there remains the character of that rotundity to be considered, and the direction of such curvature to be definitely ascertained. The Koreshan System of Cosmogony finds a true place for all the facts and arguments pointing to the earth's sphericity, applying the same to the concavity instead of the convexity of the earth. The fact that the earth is proved to be a sphere by "cumulative and circumstantial evidence," does not involve the assumption that we live on the *outside* of that sphere. The size of the earth computed from spherical angles and meridian arcs would be the same if considered from the standpoint of the earth's concavity; the evidences of spherical excess find their true application in the hollow globe, and the spherical triangles in geodetic operations fulfil their geometric functions in the concave sphere.

In the field of geodetic operations, the assumption that the earth is convex leads to a misapplication of the facts and figures involved. The most accurate work in the line of survey is made with the view to ascertaining, *not* whether the earth is convex or concave, but whether the polar diameter is greater or less than the equatorial; geodesists endeavor to ascertain, not the direction of the curve of meridian arcs, but the ratio of their curvature from stellar altitudes and measurements of arcs, with the view to finding whether the earth is an oblate or a prolate spheroid.

We are not attempting to ignore the facts and measurements obtained in this line of field work and coast survey, by painstaking men with accurate instruments; but endeavoring to have them substitute in the stead of assumption, a basis of absolute facts; so that instead of first measuring

meridian arcs and deducing a ratio of curvation, they would first ascertain the direction of such curvature, and then proceed with the work of determining whether or not the extension of that curvature constitutes a circle or an ellipsoid; they would then be able to determine whether the earth is flattened or extended at the poles.

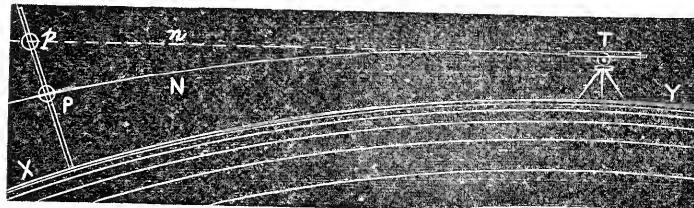
Horizontal Tangents From the Standpoint of the Surveyor.

In all work of survey and geodetic operations (save in geodetic measurements with compensation rods), visual lines are employed; and from the assumption that visual lines are straight (modified only by refraction), they invariably conclude that the earth curvates downward from the tangent visual line. We insist that it would be the wiser plan to first determine absolutely *which way the earth curves*, and from that tangible basis, determine the course or direction of the line of vision. The earth's surface is *tangible*, and can be tested; the lines of vision are *intangible*, and the direction and ratio of their curvation cannot be determined without an *absolute* demonstration of the earth's contour, from which the visual lines are divergent and tangent.

The geodetic surveyor levels his instrument, and reads a point on the signal staff at a distance of three miles; this point has an altitude in *excess* of the altitude of the cross-hair; he therefore concludes that the line of sight is straight, and that the surface of the earth curvates *downward* from the visual line. If he knew absolutely that the visual line approximated a straight line, then it would be conclusive that the earth curvates downward from the tangent; but a critical analysis of this fact only proves that a divergency exists between the visual line and the surface of the earth

or water. If the earth were known to be convex, we could safely conclude that the apparent tangent was straight or nearly so; but we should never use the assumption that the visual line is rectilinear as proof of the theory of convexity of the earth.

We endeavor to represent this in the accompanying diagram. Let XY represent the water's surface; T, the engineer's level, and A, the signal staff, at a distance of three miles, and P the point read on the staff over the cross-hair of the instrument. Now the excess of the altitude of P over T amounts, *not* to 8 inches, but only 5 inches to the mile; therefore, to make up for the calculated convexity,

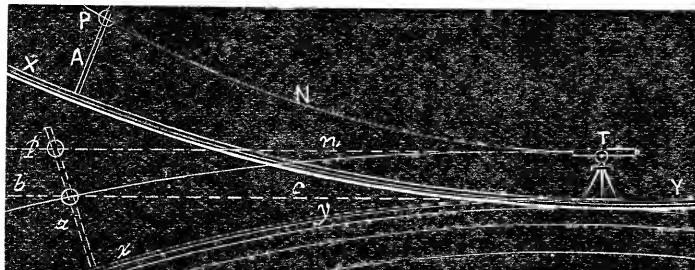


refraction, amounting to about 3 inches per mile must be allowed. For this reason we have represented the visual line TNP, in the diagram, as curved slightly downward, while the line Tnp would be, *not* the direction of the line of vision, but the direction of the supposed horizontal tangent running as a right line from T, in the direction in which P would *appear* to be, ending at p. From the above, the size of the earth is thought to be indicated. Two assumptions are factors in the usual calculation of the earth's size; first, that the visual rays are straight, and second, that the earth is convex; so that the *integral calculus* gives a quantity which is really, when all the facts are considered, applicable to the interior instead of the exterior surface of the sphere.

The one fact manifest in such observations is, that the lines of vision and the water's surface are divergent to the extent of five inches per mile; it does not indicate the direction of vision as right lines, nor does it prove the theory of convexity.

Horizontal Tangents in the Concave Earth.

Assumption should never have any weight against a fact; facts are the scales in which assumptions and hypotheses are weighed and often found wanting. If we had no



absolute proof of the concavity of the water's surface, we would be pitting one assumption against another in our endeavor to establish a new system of Cosmogony. Let the intangible visual lines be made to conform to the earth's real contour, within the known ratio of divergence.

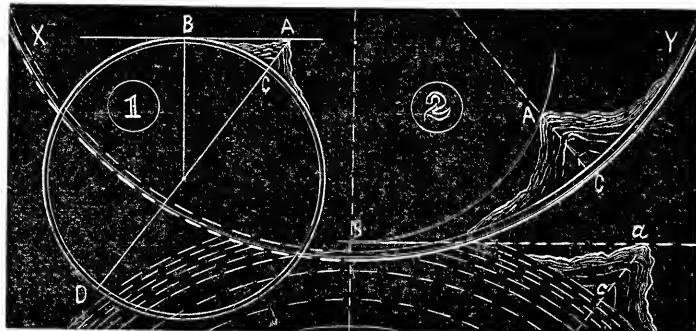
When this is done, we have that which is represented in the above diagram. XY represents the water's surface; T, the geodetic leveling instrument; A, signal staff, and P, the point read over the cross-hair. The critical mind will be able to see that if the earth is concave, the fact of the divergence of the visual lines from the earth would positively indicate the *curvature of the visual lines*, not slightly downward from a horizontal, but the curvation upward more

rapidly than the ratio of the earth's curvature; and the difference of direction of the curvating visual lines and the curvilinear surface of the water being *5 inches* per mile, would place the ratio of the curvilineating visual lines that much in excess of the earth's curvation concavely, from which it is conclusive that the visual lines curvate upward at a ratio of about *13 inches* per mile, not from the earth's surface, but from an external tangent *bc* at right angles to the perpendicular at T. The lines of vision so curvating, by virtue of the principles of curvilineation and of perspective foreshortening, the point P read on the signal staff, would appear to be in the direction of *Tnp*, a line parallel with the external tangent *bc*, and the water's surface would appear to be *below* the point read to the extent of the altitude of the engineer's level, plus the amount of divergence; in other words, the point P on the staff, would be seen at *p*, appearing to be as far below its true position as the visual line is curved vertically. The visual line is the "horizontal tangent" in the concave earth.

Appearances the Basis of Usual Geodetic Calculations.

In this way, certain observed phenomena *seem* to indicate that the earth is convex. In survey, lines and angles are taken into consideration and conclusions reached therefrom, the main factors in the conclusions being something assumed and not demonstrated; and thus a number of things are placed in the category of "proofs" that the earth is convex, and the whole considered as "cumulative and circumstantial." What other explanation can be imagined except the convexity? The explanation does not need to be imagined, but demonstrated. In the usual calculations of the size of the earth, where visual lines and

angles are factors in the calculation, an assumed quantity enters into the problem and produces erroneous deductions; the missing link is needed to bridge over the difficulty. It has not occurred to the leaders of scientific thought—they have not even imagined—that practically the same results as to calculation of the earth's size would be obtained if considered from the standpoint of the earth's concavity. The difference between the usual and the Koreshan Geodesy is, that the Koreshan System supplies



a specific premise of geodetic measurements, the conclusions from which must be absolute; and when the specific premise is restored, the principles of the true geometry will be found in the cosmic form.

If we take for instance, the usual method of calculating the earth's magnitude, and analyze its chief points, essential factors will be found to be entirely overlooked and fallacious ones substituted, the deception being not in the magnitude, but in the direction of curvature and the character of the surface on which we live. The instance is that of the height of a mountain (Fig. 1, in the above diagram), and the distance at which its top is visible at sea over the

horizon, which is supposed to furnish not only a basis of computation of the magnitude of the earth, but also a proof of convexity.

Let DBC be the circumference of the earth; A, the top of the mountain; B, the farthest point on the circle from which the mountain may be seen. Then, AB is tangent to the circle at B; AB is the secant, and AC the external segment. Therefore, Geom. 333,

$$AC : AB :: AB : AD = \frac{AB^2}{AC} \therefore CD = \frac{AB^2}{AC} - AC.$$

From this it is determined that if the mountain be 2 miles in height, and is seen at a distance of 126 miles, the value of CD, expressed mathematically, would be 7,936 miles.

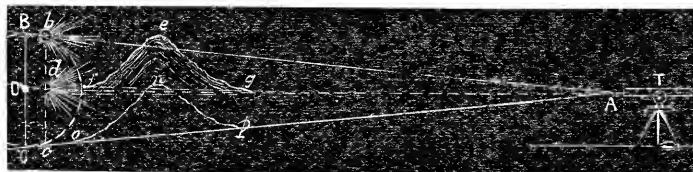
The diagram may be studied further with profit, with some principles in mind—those of perspective foreshortening and visual curvilineation. Does it not seem that in the acceptance of this appearance as indicative of the shape of the earth, that the direction of the earth's curvature and the ratio of foreshortening and visual curvilineation should be considered as essential factors in the solution of the problem? Suppose that these factors compensate for the calculated convexity, the computation of the earth's magnitude would be practically the same, if taken upon the basis of the concavity. We maintain that the above calculation does not indicate that the earth is convex. Definite knowledge of *which way* the earth curves must be made the prime factor in all such calculations; the concavity of the earth furnishes a basis for absolute calculation.

For comparison, we present Fig. 2 in the same cut, showing that if the earth be acknowledged to be concave, the geometrical relations would be changed but little from

those in Fig. 1, and the results of the calculation are practically the same. B is the point of observation, and BA the curvilinear visual line diverging from the surface XY. The top of the mountain would appear to be seen at *a*, as far *below* its real place as the visual line has curvated in the vertical direction; and the earth would appear to follow the direction of the dotted segment or arc of circle beneath.

The Cross-Hair and the Vanishing Point.

There can be no *direct* visual line from the engineer's level to distant objects, for the reason that the "line" extending from the eye to the vanishing point of an object, must embrace a dimension at the vanishing point, equal to the diameter of the object vanished. Suppose a balloon



100 feet in diameter recedes horizontally into space, to almost its vanishing point; it would be a mere speck in the sky. Let BC, in the above diagram, represent the diameter of the balloon, and D the speck or vanishing point. Adjust the engineer's level T, so that the cross-hair will just cover the point. To what part of the balloon is the visual axis of the instrument pointing?

Suppose that there could be extended from A to the balloon, a thread so that its *apparent* diameter shall be the same throughout the distance; its diameter would have to *increase* in proportion to the distance, until at the place

where the balloon appears to be a point, the thread would be 100 feet in diameter; which diameter is represented by bc. At *b*, place an electric light; now direct the instrument to the point of light; the space between *b* and *c* appears contracted to a point, and consequently the point of light would appear to be at *d*.

Ignoring the important factor of perspective, and assuming, as does the surveyor, that the visual line is a direct line, measure the distance from *b* to *d*; it is 50 feet, and the light appears to be at *d*. Shall we then conclude that *d* is 50 feet *below* where the light *appears* to be? Shall we conclude that the longitudinal axis of the thread curves *downward* from the visual line extending to *b*?

Remove the thread, and the "visual line" at the vanishing point of 100 feet embraces the dimension of 100 feet; but it appears to be contracted to a point. Let efg be a hill 60 feet in height, 50 feet of which are within that space contracted to a hair-line; 10 feet of it would still be visible, but the space below that is vanished, and the top of the mountain would be seen at *n*; shall we then conclude that the base of the hill is at *op*, and that the surface on which it rests has curvated downward from the line *Ad*? This is precisely the argument used by the surveyor to prove that the earth is convex, curvating away from the "visual line!"

Modern Science has been Unable to Discover and Apply the Means of Demonstration of the Earth's Shape.

From the above consideration, it will be seen that the "proofs" usually offered in favor of the earth's rotundity do not reach the point of absolute evidence; they do not demonstrate absolutely whether they are applicable to the exterior or to the interior surface of an earth, 8,000 miles

in diameter. It seems strange that the modern, so called scientists should have so long failed to find some means of ascertaining absolutely, the earth's true form; it seems never to have occurred to them that the absolute test is to be found in the extension, as a direct or *air-line*, of the horizontal from the vertical point of a given perpendicular, instead of the visual line, subject to curvilineation. The latter has played havoc with modern scientific investigation and geodetic survey; the former is absolute, and would long ago have decided the great issue had it been applied by them. Why has not the ingenuity of the nineteenth century devised some means to test the surface of the water in equilibration, by other means than the visual lines? Something has conspired to prevent them, and for this reason they have not been able to do so.

The fact that in the Koreshan System, not only are the principles of such a demonstration discovered,—not only is the entire question reduced to a specific proposition and to a pivotal point and fact of demonstration, but also the invention of a scientific apparatus to enable us to make such absolute demonstration, is evidence that something has conspired to render us able to do that which the boasted scientific world has *not done*, and has not been able to do. It evinces the fact that KORESH, the Founder of the marvelous System of Koreshanity, is promulgating the science of cosmic form and function; and it bespeaks the success of the Koreshan System in not only revolutionizing the present methods of geodetic survey, operations, and experiments, and of general scientific investigation, but also in overthrowing every conclusion of modern science !

There is no deceit in the Koreshan System; there is no reason why there should be. It invites investigation and

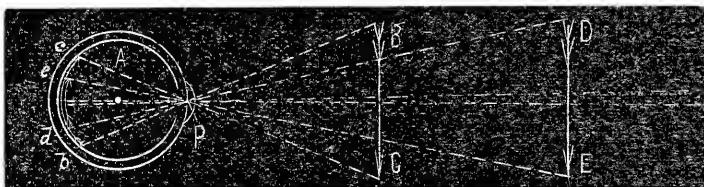
test; it openly proclaims to the world, not only its premise, but also the discovery of absolute measures whereby its premise may be tested. It comes laying the foundation for the science of future ages, and every stone in its foundation must be as solid as the everlasting hills, and its fundamental principles as eternal as the contour of the earth. No other system has made such bold claims; no other system has been able to locate its pivot, and no other system fearlessly asks the scientific world to test its truth by ascertaining, by absolute measures, what is the testimony concerning the earth's contour.

Limit of Lateral Vision in Concave Earth.

One of the most common objections advanced by those giving the Koreshan Cosmogony a casual glance is, that if the earth be concave, why can we not see the actual rise of the earth beyond and upward from the horizon, from the position of the observer? It appears to such that there should be no horizon at all in fact, but a continued slope upward, outward, and onward; that vessels could not disappear on a concave earth, and that Chicago should be visible from St. Louis. Of course, such objections are urged without consideration of the fundamental facts and laws of vision and principles of perspective, and moreover, without an investigation of the Koreshan System. We shall endeavor not to introduce abstruse illustrations in the removal of this objection, but to use some of the simplest illustrations, the force and clearness of the application of which we trust will be realized by those considering the facts and arguments.

It is a fact patent to all, that objects of a given size, receding in the distance, *appear* to grow smaller and smaller

until they entirely disappear. They do not in fact diminish; the apparent diminution in size is due to the operation of certain visual laws in the implantation of the impression of the objects upon the retina of the eye. It is a fact well known to those who have had to do with parallel lines, or who have observed a straight reach of railway tracks, that there is an apparent convergence in the distance. When the mind perceives an object which appears to be small, it is either actually small in size, or it is distant; if large, it is either actually large or near. The *apparent* size of an object, therefore, depends upon the visual angle which the object subtends. We may illustrate this principle by the following diagram: A represents the eye; BC an arrow 12



inches in length, at a given distance from the eye; and *bc*, its impression upon the retina of the eye; *DE*, the same arrow removed to twice the distance from the eye, and *de*, the length of the impression upon the retina; *P* is the pupil where the rays cross and focalize. Let it be noticed here that *de* is just one half the length of the image *bc*, and the angle *Pbc* therefore, is proportionally larger than the angle *Pde*. The same arrow could be removed so far from the eye as to be entirely invisible. The smallest angle under which an object can be seen is about one sixtieth part of one degree, or one minute ($1'$) of space, so that when an object is removed to a distance which equals 3,000 times its

diameter, it will subtend an angle no larger than one minute ($1'$) of a degree, and therefore, will be visible as a point; this is the vanishing point.

For the sake of illustration, let us suppose that a balloon 100 feet in diameter recedes until it appears to be a mere point. We know that it has not actually been reduced to a point. The vanishing point of the balloon necessarily embraces a dimension of 100 feet. If we extend a thread to the balloon so that it shall have apparently the same diameter throughout the distance, its diameter will have to be increased proportionably to the distance, so that when the balloon is reached the thread would have to be 100 feet in diameter. When the eye is applied to the thread, its sides, although curvating outward more and more like a trumpet, appear absolutely parallel and the sides straight. The upper or vertical point of the thread at the vanishing point of 100 feet, would really be higher than it appears to be—being 50 feet higher than the level of the eye, because the whole dimension of 100 feet has been reduced to a point. If the thread be extended in the opposite direction, the result is the same; and if 10,000 threads be extended radially from the eye, so that the longitudinal axis of each thread would be in the same plane, they would be placed so closely and compactly as to form a surface. The upper surface of each thread at the flaring end would constitute a part of a rim, the limit of the slope upward in every direction from the center, while the appearance would be as if the eye were looking out upon a flat plane. The fact would be that the upper surface of the threads would constitute a basin, with the eye at the bottom of a concavity 50 feet deep!

Let us inquire if a rise of 8 inches of the surface of the earth would be perceptible to the eye. Suppose the eye

looks out upon a flat plane, whose radii are one mile in length. Let the eye be placed near the surface of the plane, after placing at a distance of one mile, an object having a vertical dimension of 8 inches. The object would be invisible, because an object of that dimension is not sufficient to subtend an angle of one minute ($1'$) of a degree—it is not of sufficient size to fill the area of vertical perspective for one mile. The distance at which an object 8 inches in diameter would become invisible is $8 \times 3,000 = 24,000$ inches, or 2,000 feet, less than one half a mile. A rise of 8 inches of solid ground or a concavity of 8 inches for an area of one mile radius, would not be perceptible to the unaided eye.

If the eye be elevated 8 inches above such a concavity, the horizon will appear to rise 8 inches. Will now the second mile, curvating four times as much as the first mile, be apparent to the eye at an altitude of 8 inches? The curvature upward of the earth in two miles is 32 inches—2 feet in excess of the curvature for the first mile. The second mile would actually rise 2 feet higher than the eye, which has an altitude of 8 inches above the surface. Is the space of 2 feet at a distance of 2 miles, sufficient to subtend an angle of more than one minute ($1'$) of a degree? $2 \times 3,000 = 6,000$ feet; an object embracing 2 feet vertical dimension, would become invisible at a distance of 6,000 feet. The 2 feet vertical rise of the earth in 10,560 feet or 2 miles, would be imperceptible to the eye; and so on, for the third mile, with similar results.

Let the eye be supposed to look out over a concave area whose radii would be 6 miles, as represented in Diagram 5, Plate 2. XY represents the concave surface; S, the beginning of the arc; 1, 2, 3, 4, 5, 6, points on the earth's surface one mile apart. The eye at A is situated 24 feet above

the surface, with the horizon at a distance of 6 miles. The first mile, the definite length of which lies between S and 1, would make a picture upon the retina of a definite length, *ab*; the second mile would make a shorter picture, *bc*; the third mile, a still shorter picture, *cd*, and so on, until the last mile subtends an angle too minute to be perceived by the unaided vision; at the distance of 6 miles, the vertical and geolinear foreshortenings have operated so harmoniously as to form the horizon point practically on a level with the eye; beyond which the concave surface appears to drop out of sight. The earth is not sufficiently concave—that is, the ratio of concavity is not equal to the vertical perspective, so as to cause a continuous view outward and upward on the concave "slope." What must be the ratio of concavity to just fill the area of vertical perspective so that each mile will subtend an angle sufficiently large to be impressed upon the retina? If the earth were less than one half its present diameter, curvating concavely as rapidly as 13 inches per mile, the concavity would not be perceptible; and the horizon, although exactly on a level with the eye, would be so far distant as to destroy the appearance of a clear-cut line. The earth curvates concavely at the ratio of about 8 inches to the mile; it therefore *lacks* 5 inches to the mile of filling up the perspective dimensions; so that a view upon the concave surface curvating 8 inches to the mile, produces that effect upon the eye which it is supposed would be produced upon a convex earth, curvating about 5 inches (corrected for greatest refraction) to the mile—a distinct horizon, the distance to which is determined by the altitude of the eye of the observer above the surface at place of observation. Beyond the horizon, the surface seems to drop out of sight or curvate downward; and the distinct horizon appears a little below the actual level at point of observation.

The Earth is Not Convex.

Series of Experiments Conducted on the Water's Surface by the Koreshan Geodetic Staff.

UPON the exterior surface of a globe 25,000 miles in circumference, there would be a definite ratio and amount of curvatura. Every part of its surface would be convex—the arc of a circle; from the apex or summit of any such arc there would exist a curvature of 8 inches for the first mile, and at the end of the second mile a declination of 32 inches; while for the third mile, a fall of 72 inches or six feet; and in six miles, there would be a declination or curvatura downward from a horizontal tangent, of 24 feet. For every mile after the first, curvature downward would increase as the square of the distance in miles multiplied by 8 inches. These figures are obtained from the solution of a simple geometrical problem, and at present constitute the formula of calculation of the supposed convexity or rotundity of the earth's surface. That the reader may know that we offer here no exaggeration of the amount of the accredited curvature, we quote as follows, and suggest that any work on geodesy or geometry may be referred to:

The curvature of the earth from a tangent line is 8 inches for one mile from the point of contact; 32 inches for two miles; 72 inches for three miles, etc.—Mattison's Astronomy.

The amount of curvature or divergence from the vertical increases as the square of the distance. The curvature of the earth is 8 inches for the first mile, 32 inches for the second mile, and so on.—Encyclopaedia Britannica.

The depression for one mile, determined geometrically, amounts to 8 inches; obviously, the depression for two miles is four times 8 inches, or two feet and 8 inches; for three miles, the depression is 9 times 8 inches, or 6 feet; and so on—with such greater distances as

have to be considered in ordinary observations. Thus up to 100 miles it may be said that the depression, estimated geometrically, is equal to 8 inches multiplied by the square of the number of miles.—Proctor.

The Universal Laws of Hydrostatics.

If the earth were convex, all water in equilibration would conform to this ratio of convexity; oceans, seas, lakes, and canals would present convex surfaces, and in a few miles the curvature would be appreciable to the eye. Upon this point there is no dispute among the physicists. That such curvatura is claimed for all waters at rest, is shown by any work on hydrostatics, in which will be found some laws relating to the pressure and balance of fluids. The foundation law of hydrostatics embraces certain principles which may be briefly summed up as the necessary consequences of the property of all liquids:

(1) In a perfect fluid when still, the pressure exerted at a given point is normal to the surface upon which it acts, and of equal intensity for all positions of that surface. (2) The surface of equal pressure in a still fluid mass, is everywhere at right angles to the direction of gravity—that is, horizontal. (3) A horizontal surface that is everywhere at right angles to the direction of the force of gravity. Such is the surface of a piece of still water.

The above is a brief statement of what is presented in any standard work upon the balance of fluids. From the natural consequence of the law of hydrostatics, the surface of all water must conform to the general contour or configuration of the earth; this is universally admitted by all scientists and physicists. The principles involved here are so clear and self-evident that there can be no escape from the acknowledgment of so palpable a fact. The issue rests

here—not that the question is whether or not these laws are true—but the great issue of the shape of the earth can be tested and settled upon this pivot. If water can be determined to be convex, the surface of the earth upon which we live is convex; if water can be determined to have some other form of surface, then it is equally clear that it would indicate that the general configuration or form of the earth does not conform to a convexity. A test of the water's surface, then, would settle the question of the convexity or non-convexity of the earth. The Koreshan System maintains that it is concave, the surface of the earth curvating upward at the ratio of 8 inches per mile.

Proctor's Denials, Comments, and Admissions.

Astronomers universally recognize that the issue rests here. Proctor busied himself to some extent with the question—not in making experiments of survey upon the water's surface, but in the endeavor to console himself in referring to the attacks upon the Copernican system, by denying the testimony of experimentalists concerning even the non-convexity of the water's surface, in which he said:

Of course, if Parallax had, with his eyes a few inches from the surface of Bedford Canal, seen an object close to the surface six miles from him, there manifestly would have been something wrong in the accepted theory about the earth's rotundity.—*Myths and Marvels of Astronomy*, page 279.

Parallax' chief argument at his first lecture was one which could not possibly be answered. He described how he had stood up to his neck in the water of Bedford Canal, where there is a straight reach of six miles, and had, with the telescope, seen down near the water's edge a small boat six miles away. Of course, the only sound answer to his reiterated questions, "What say you to that? how can you explain that?" was simply, "We do not explain it; we decline to believe it."—Proctor's Letter to *Harper's Weekly*.

From the above, it is evident that astronomers in general hold that even the smallest bodies of water conform to

the accredited convexity, and would argue for the rotundity of the water's surface in conformity with the usual formula. That the reader may be able to contrast theory with facts of experiment, we here present some figures and conditions which would inevitably obtain were the popular belief true.

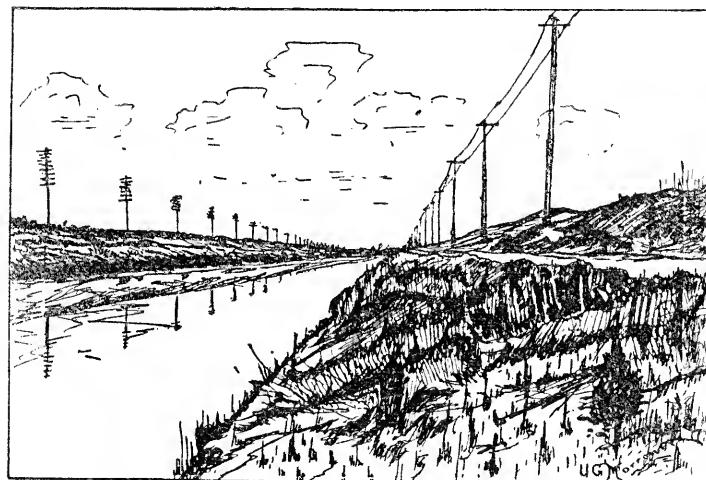
If the earth were convex, a boat receding from a given point upon the surface of a canal would finally disappear over and beyond a hill of water; the relative distance at which it would begin to disappear can be exactly calculated upon the basis of convexity, as for instance: If the eye were 18 inches above the water, any part of the water's surface in the direction of the receding boat could not be seen beyond the apex of the bulge; the line of vision would come in contact with the top of the bulge or hill in $1\frac{1}{2}$ miles. Beyond that point the boat would begin to disappear, until at the end of three miles, 18 inches of the vertical surface of the boat above the water would be invisible, because that much of the boat would be beneath the direct line from the eye over the apex of the bulge. When $4\frac{1}{2}$ miles have been traversed by the boat, an object in the boat 6 feet in height would be *entirely out of sight*; while at the end of 6 miles the surface of the water would be $13\frac{1}{2}$ feet below the line of vision, or that far below the extension of the direct line connecting the eye at the apex of the bulge or convexity. It is obvious that if the boat were this far beneath the line of vision, no aid to the eye could bring the boat into view; a telescope with the power of any number of diameters, could not assist the eye to see through a hill of water occulting the boat $13\frac{1}{2}$ feet below its summit!

Experiments on the Old Drainage Canal, Chicago.

As the first of a series of proposed practical experiments with the view to demonstrating the true form of the water's

surface, experiments were conducted upon the surface of the Old Illinois Drainage Canal, July 25, 1896; beginning with the bend in the canal at Summit, Ill., and running up the canal 5 miles to the northeast, to the first bridge.

At the beginning of the line of experiment, a target 22 inches in diameter was fixed upon a staff driven in the bottom of the canal, so that the center of the disc was just 18



Old Illinois and Michigan Drainage Canal.—Site of Experiments,
July 25, 1896.

inches, and its lower edge 7 inches, above the water. From this point a boat containing the three observers, with telescope, materials for sketches, etc., was rowed a distance of three miles; the boat was then anchored and an accurate view was obtained of the target. The whole of the disc of the target was plainly visible, appearing a little above the water, with all the sections of colors of black, white, and red painted upon it. According to the accredited convexity, with the

telescope 12 inches above the water, only 5 inches of the top of the disc should have been visible.

When the boat was rowed to the distance of 5 miles from the target, it was anchored under the bridge, and another view was obtained with a telescope 12 inches above the water; the target was visible, also the hull or body of a barge located by the side of the target, upon which, at this distance, men were seen working. At this point also, 5 measured miles from the target, the telescope was lowered to within 6 inches of the water, and through it the target and the barge were as plainly visible as with the instrument 12 inches from the water's surface; the target being plainly discernible against the bank of the canal, in the beginning of the bend in the course of the canal. With the instrument 6 inches above the water, the horizon or apex of the bulge, on the basis of assumed convexity, would be about three fourths of a mile away, from which apex the water would curvate away for the remainder of the 5 miles; only three fourths of a mile of the water's surface could be visible to the eye unaided, or aided with the telescope. The declination in the remaining $4\frac{1}{2}$ miles would be 12 feet; the top of the target, which was 29 inches above the water, should have been 9 feet, 7 inches below the line of vision; consequently, not only should the target be entirely invisible, but also the bank of the canal below the tow-path, which was less than 8 feet above the water.

Convincing Observations on the Return Journey.

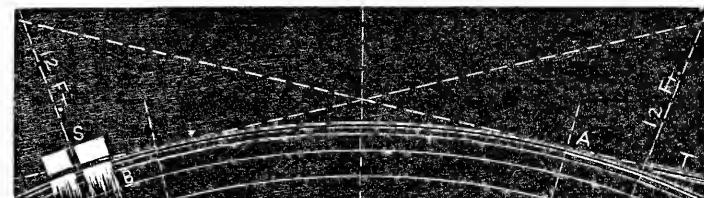
Under the bridge from which the above observations were made, two large targets, one 21x27, and the other 26x38 inches, were fastened side by side so that the lower edge of each was 7 inches above the water. The paper of

which they were made was white; they were placed in the sunshine directly beneath the bridge. When the boat was rowed three miles on the return trip, observation was made with the telescope 12 inches above the water; the entire surface of the targets was plainly visible above the water.

Upon returning to the first target, 5 measured miles from the bridge, the boat was anchored; the sun was shining brightly upon the paper targets under the bridge; the targets were visible at this distance, to the *unaided* eye of each observer sitting in the boat, the eye being about 30 inches above the water. The canal was quiet and still, with scarcely a ripple on its surface; the conditions were the best and most favorable for the final tests and observations of these experiments. A particular observation was made without the telescope. The writer slowly lowered his head from its position in a sitting posture, to within a few inches of the water; as the eye came within 15 inches of the surface, the targets became invisible; upon sitting erect again they came into view. Repeatedly the eye was lowered, but each time the targets could not be seen. To the unaided eye, about three feet of space above the water appeared occulted, and that much of the piers under the bridge appeared out of sight. Will the telescope bring the targets into view again at a nearer approach to the water? Had a boat been alongside the targets, it could not have been seen with the eye alone; the body of a barge three feet above the water would have been invisible.

The telescope was placed 12 inches above the water, and through it the targets were plainly visible. The instrument was then lowered to within 6 inches of the surface; the same view was obtained, with the entire surface of the targets in plain view. The result of the comparison of the

conditions of observation with the accredited convexity, is the same as in the case of the first target from the view under the bridge, with the instrument 6 inches above the water. The tops of the targets, if the water were convex, should have been 9 feet 10 inches below a direct line extending from the eye over the apex of the bulge to the terminus of the five miles. The accompanying diagram illustrates what would be the conditions and relations of the eye, the line of sight to the occulted objects, upon the basis of the calculated convexity. T represents the telescope, 6 inches from the surface; A, the apex, $\frac{3}{4}$ of a mile distant; S, the



signals or targets, and B their reflections upon the water beneath.

The Striking Feature of the Final Observation, Giving Unmistakable Evidence that Water is Not Convex!

But the most striking feature was noticed in this last observation at the end of the return journey—important, because it afforded the most unmistakable evidence of the water's non-convexity. Directly beneath the targets were seen their white reflections upon the water, elongated and waving with the slightly rippling surface. We found here a fact mirrored in the water, which cannot possibly be explained away; this view, obtained from careful and steady adjustment of the telescope, showed conclusively that we not

only saw the targets, *but also the water directly beneath the targets*—we saw every foot of the water's surface between the anchored boat and the white targets; and not only this, but the surface of the water extending up the canal to bridge No. 2,— $1\frac{1}{2}$ miles more distant. The timbers to which the targets were fastened, and the stones of which the piers were built, were visible down to the surface of the canal.

The evidences presented in these observations were most satisfying and convincing. Manifestly, had there been the slightest convexity upon the surface of this canal, with the telescope 6 inches above the water, no reflections of the targets upon the water beneath could be seen; and with the accredited convexity, any object under the bridge, 12 feet above the water's surface, would have been invisible. The bridge, the piers, the bank on either side, with the two lines of telegraph poles, and the targets upon the water, were carefully observed as to their relative size, from the time we left them. The last view through the instrument, of the relations of size and dimension of the objects, was the same as in the view with the unaided eye, one half mile from the bridge. There was no distortion; there could have been no refraction nor mirage. For comparison, carefully-drawn sketches were taken of each observation.

The surface of the canal is the same today as it was July 25, 1896; the bridge is there, and the targets can be placed in the same position again. The same views can be had under similar conditions, with the targets and objects standing out in bold relief and in plain view, as indisputable testimony to the truth of the Koreshan Cosmogony, and in refutation of the modern system of science built upon the assumption of the water's convexity. Once more the tele-

scope is used to revolutionize science! Three hundred years ago, it was with the greatest difficulty that scientists could be induced to look through the magic tube; at that time, observation through it meant conversion to the new system. Today, this scientific instrument is put to a new use, and the principal difficulty now is to induce leaders of modern scientific thought to use it upon the surface of any body of water. We will escort any number of surveyors, engineers, or scientists to the surface of still water, where the experiments and observations can be repeated with the results as given above. *Let it be put to the test!*

Experiments on Lake Michigan.

That the surface of the sea is convex, is shown by the way in which the ship disappears when it sails from the shore. First, the hull goes down behind the horizon, then the sails, and finally the mastheads. If the ship moved on any other than a convex surface it would appear again in the telescope.—Prof. Peabody, Astronomer.

If the water were convex, when boats and ships disappear in the distance hull down, they would do so because the intervening hill of water would prevent their being seen; it is conclusive that if this were the case; the telescope would be powerless to render the occulted portion of the ships visible again. It is equally clear that if the telescope can restore the vanished hulls, the water upon which they sail is not bulged and does not curvate downward beyond the horizon.

It is with reference to this phenomenon that special observations were made on August 16, 1896, from the shore of Lake Michigan, World's Fair grounds, by the Experimenting Staff. The atmosphere was clear and the horizon sharply defined against the sky beyond. Several sloop yachts and a schooner were observed at a distance of about

12 miles; from an altitude of 10 feet above the water (from a pier extending into the lake), the hulls and about one half of the height of the masts were invisible to the unaided eye; through an opera glass, all of the surface of the sails and the full height of masts were visible, with the hulls still invisible; but with a telescope of about 40 powers, the hull of each vessel was brought into view with remarkable clearness.

We then went to the beach, and with the unaided eye about 30 inches above the surface of the water, only a very small portion of the top of the masts could be seen—they appeared like mere white specks just above the horizon. With the eye at this distance from the water, if the water were convex, the horizon would be two miles away, leaving 10 miles to curvate downward from the horizon, placing the hull of each boat 60 feet below the horizon; and as the masts of the sloop yachts were probably not over 40 feet in height, and if not, their tops would have been at least 20 feet out of sight. It was now that the test came with the opera glass and the telescope. With the opera glass, only about one half of the height of the sails and masts could be seen; but through the telescope, the hull of each yacht, at the distance of 12 miles, was made plainly visible. On the Lake shore at Roby, Ind., August 23, 1896, we made seven specific observations, some of which we briefly present below: We were greeted with the most beautiful horizon—clear and well defined; and the observations were rendered the more satisfactory by reason of the sunshine upon the vessels from the west. As we approached the shore we observed, with the unaided eye, what appeared to be a mere white speck upon the horizon. It was a small steamer, with only a small portion of the pilot house visible above

the water line. In the field of the telescope, applied to this horizon point, we observed the steamer down to the actual surface of the water upon which it rested; the whole of its body was in plain view.

In about half an hour the top of the smokestack of another small steamer was seen; and through the telescope, the whole of the body of the vessel. A number of observations were made of some yachts, whose topmasts only were visible above the water line by means of the naked eye, but whose hulls were clearly seen through the instrument, the altitude of which was about 18 inches above the Lake level.

Presently, we saw a larger vessel running along the horizon line, with nearly the whole of its body out of sight. It was one of the liners running from the docks of Chicago to Michigan City, Ind. With the telescope it was brought into full view. It was going in a direction that soon took it *entirely out of sight* to the naked eye; not even the smallest portion of it was visible to the eye alone; its direction could only be pointed out by the cloud of smoke which followed it. Once the smoke cleared away, and there was nothing to indicate to the unaided eye the whereabouts of the vessel; and it could only be found by sweeping the horizon with the telescope.

To obtain the very best observation possible, the telescope was adjusted very carefully and allowed to rest upon a support; and through the steady atmosphere upon the quiet lake, we observed the whole of the vessel, every part of which was entirely obscured to the unaided vision. The steamer was at least 15 miles distant; according to the accredited convexity, the lower part of the vessel would have been 150 feet below the horizon. If we considered

refraction to be one third (it is seldom allowed to be over one fifth), there would remain 100 feet between the refracted visual line and the hull of the steamer!

Now let the facts of this observation be considered. If it be admitted that convexity intervened between the eye and the vessel to cut it off from view, would not the convexity still remain to occult it in the telescopic field? It is clearly to be seen that if convexity were the cause of the disappearance of the vessel, it would be as impossible to see it through the instrument as with the naked eye. It seems strange that a matter so easily observed as this, should have so long escaped even the most casual observer,—to say nothing of the scientist. We offer at this time no explanation of the reason they have overlooked it; suffice it now to say that what we have observed can be seen any clear and calm day upon the Lake.

Observations on Southern Waters.

Series of Experiments Conducted on the Gulf of Mexico and Bay of Naples.

THE observations carefully conducted by the members of the Geodetic Expedition, were in every way satisfactory and conclusive. These experiments are sufficient to overthrow the old system of astronomy, and to establish the Cellular Cosmogony of Koreshanity. The facts obtained by these processes are such that, were they observed by the people of the world generally, they would leave not a foothold for the now declining systems of science!

While the preliminary work with the Rectilineator was in progress, the operators lost no opportunity for conduct-

ing all that were possible of the experiments and observations in demonstration of the Koreshian premise. About seventy-five such experiments were conducted; these involved numerous critical and comparative observations of the sea horizon under various meteorological and atmospheric conditions, distant vessels, coast lines, etc.; and the evidences of the earth's concavity thus afforded were conclusive and absolute.

Westward from the Naples coast line, there stretches the beautiful Gulf of Mexico; away in the distance, from the north through west to south, the great semi-circle of the Gulf horizon bounds the waterscape. From the point of observation to the lateral arc of horizon of nearly 180° , the great concave sheet of water extends. From whatever height the observation is made, the horizon rises to meet the horizontal plane of the eye, and beneath lies the dark bowl, the sides of which gradually curvate *upward* to the horizon rim—the limit of the lateral or geolinear perspective.

Vessels of various sizes were daily coming within the horizon of our Operating Station. From the distance they came into view, and from plain view they gradually disappeared. In approaching our field of vision, only the topsails were visible to the naked eye; gradually the lower sails and finally the hull, were exposed to view. When receding, the familiar phenomenon of the hull going "down" was observed, then the lower sails, and finally the entire vessel. Were they sailing over a bulge or hill of water on a convex body? We are all familiar with the usual illustration used in text-books of modern schools, to convey the impression that the earth is convex. Everywhere, from all quarters, this so called proof that we live on the exterior surface of the earth is urged against the Koreshian System. It was

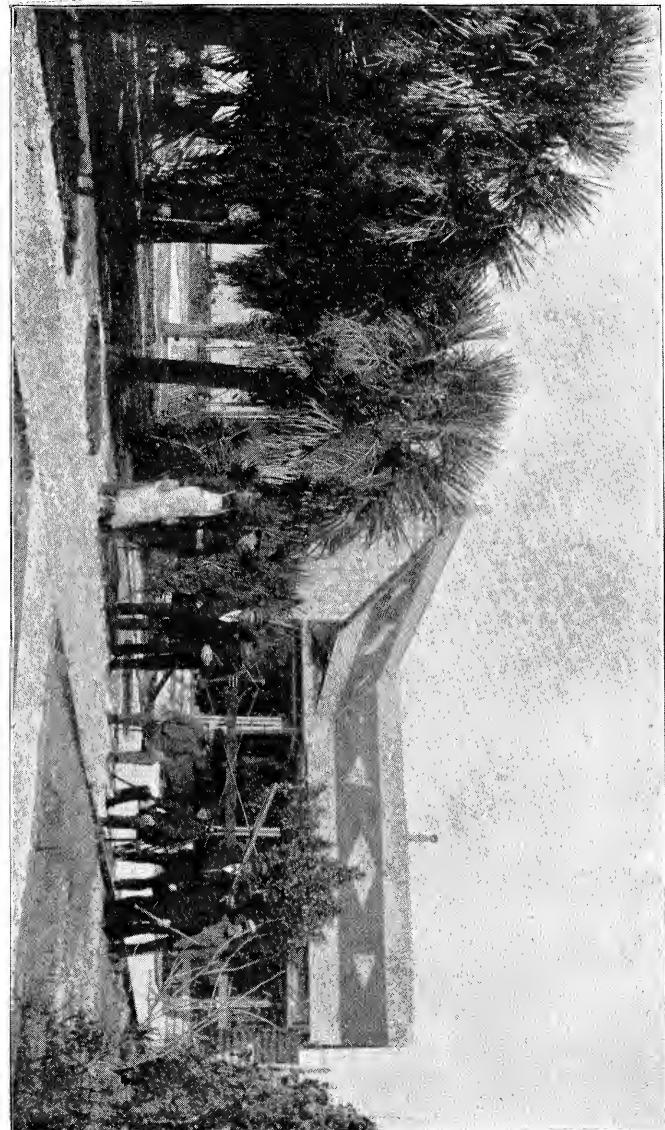
the purpose of this Expedition to utterly destroy and refute all the usual objections against the System, by the facts themselves. The argument of the earth's convexity, as made to rest upon the phenomena of the appearance and disappearance of the hulls of vessels upon the sea, can have no real basis when the mind realizes the facts of comparative observations with the natural eye and a powerful telescope. In these observations alone, is found that which is worth far more than the expenses of the Expedition; but our series of experiments had only begun. We will give brief accounts of a few of the scores of observations made during the five months' experimentation at the Operating Station.

Observations From Naples Beach.

On January 12, from the Naples beach, a four-mast schooner was observed in the southwest, at a distance of about 10 miles. It at first appeared to be but a dark line upon the water horizon. Soon, however, it became more distinct. The hull and about one half masts, and consequently about two thirds of the main sails appeared to be cut off by the water beneath. Through the large mounted telescope, not only were the top of the masts and the sails, but also the hull in plain view. Capt. Gilbert, of the sloop Ada, who was present at the time of the observation, considered the vessel about half mast "down," upon viewing the vessel through the instrument and seeing the hull even down to the water upon which it sailed, he considered it a genuine case of bringing into view the hull of a ship invisible to the unaided eye.

How do we know that we saw only about half masts with the naked eye? We will endeavor to illustrate the same by means of a rough draft of the four-mast schooner in

Property of Col. W. N. Haldeman, of Louisville COURIER-JOURNAL, owner of Naples, Fla., a beautiful Winter Resort.
Etching No. 2.



to the water line, the rigging, masts, and pilot-house were visible as shown in Fig. 4. This observation was in every way satisfactory, because the condition of the atmosphere admitted of a sharp, clear view of the horizon and the smoke, which made the contrast more effective in the comparative observations. In this experiment the telescope brought all of the body of the Mangrove into view, when entirely invisible to the naked eye.

February 7, 5 p. m.; two-mast schooner, with two flying jibs was seen, which to the unaided eye appeared about half mast "down," with the hull entirely out of sight. There could be no mistake about this, as the vessel was observed in the north while the sun was shining brightly from the southwest. Through the mounted telescope of about fifty diameters, all of the sails, masts, and hull were plainly visible to the water line. Sloop was seen at the same time as two-mast schooner, appearing only as a white speck on the horizon. Through the telescope the sail, mast, jib, and hull were visible.

February 11, 4 p. m.; large schooner observed in southwest; appearance to unaided eye about half mast "down," with the hull entirely hidden from view. Through the telescope the lower masts, sails, and hull were visible. Statement to this effect is in possession of the Staff, signed by Victoria Grafia, Pre-Eminent of the Koreshan Unity, and Rev. E. M. Castle, who were witnesses of the experiment.

February 13, 9:45 a. m.; sloop observed about 9 miles from shore. With the most careful observation with the eye alone, not more than half of the mainsail could be seen. As the vessel was in a calm, the very best opportunity was afforded for critical observation. The telescope not only showed plainly the topmast and rigging, but also the hull down to the surface of the water.

February 15, 10:15 a. m.; a jigger rig yacht came into view with only about one third masts visible above horizon. The horizon line was fine; there was no haze, and topsail of the vessel was clear cut and well defined to the naked eye, the water beneath apparently occulting two thirds of sails and all of hull. At first glance it appeared as a white speck on the horizon; the most careful view with the unaided vision would not permit the sight of the lower sails and hull. The view through the telescope showed such a contrast, through which the hull became visible with marked distinctness, the vessel in the telescopic field being visible down to the water upon which it sailed.

February 17, 10 a. m.; schooner observed in northwest. A sailor passing at the time was asked how far "down" the vessel appeared to him. "About half mast 'down,'" he said. With the axis of the telescope about 5 feet above water level, the hull was visible, and was observed by members of our Staff and Corps, as well as by the sailor. The telescope was then taken to the water's edge, with the tripod lying on the sand and the telescope resting on a small support, so that it was about 15 inches above the Gulf level. Through the instrument in this position, with the head on the sand at the subjective eyepiece, the hull was still visible. The sailor considered the vessel about 8 miles distant. With the eye 15 inches above the water, the horizon, if the earth were convex, would be about $1\frac{1}{2}$ miles distant, leaving $6\frac{1}{2}$ miles for declination beyond the horizon, which would amount, according to the ratio of curvature, to a little over 30 feet, placing the hull that far below the line of vision!

Sanibel Light Visible 34 Miles.

The lighthouse on Sanibel Island is 34 miles N. N. W. from Naples. The light has an elevation of 98 feet above mean

tide level. In order that other lights may not be mistaken for lights in lighthouses, every such light possesses certain characteristics by which it may be recognized by all—such as alternating or intermittent flashes, different colors, etc.

On the evening of January 5, 1897, from the dock extending into the Gulf at Naples, the Sanibel Light was observed through the large mounted telescope, directed to N. N. W. The intermitting flashes showed it to be the Sanibel Light beyond any reasonable doubt. Let us consider the utter impossibility of observing this light at this distance if the earth were convex. The axis of the telescope was about 17 feet above the water level; this would place the horizon about 5 miles away, leaving 29 miles of declination from the horizon to the lighthouse, which would amount to 560 feet, the required height of the light to be seen at an elevation of 17 feet from Naples. Here is manifest a difference of 462 feet between the fallacious Copernican theory and facts of actual observation! This light has also been seen from the Naples dock with the naked eye, under extremely favorable circumstances, concerning which we append the following statement:

In March, 1895, one evening between 8 and 9 o'clock p. m., I, in company with Mr. Drummond and Mr. Hugh McDonald, of Covington, Ky., and Thos. E. Hart and N. Walker, of Marco, Fla.; saw from the pier or dock at Naples, Fla., the Sanibel Light in lighthouse on Sanibel Island, N. N. W. from Naples. The evening was clear and the light shone clearly. The light is an intermittent one, with one bright flash and two less bright; these flashes came in regular order throughout the time of observation, so that we could not have been mistaken regarding it being the Sanibel Light. It was at low tide, with Gulf very smooth, with northeast wind for several days previous. The mean difference between high and low tides here is about $3\frac{1}{2}$ feet. The height of the floor of the pier from low tide is about 12 feet.—David N. Walker, Sailor, Marco, Fla.

I was present at the observation referred to, and attest the truthfulness of the above statements.—N. Walker, Marco, Fla.

Cape Romano Visible 25 Miles With the Eye at Water Level.

With clear atmosphere and calm weather, the distance at which objects can be seen upon the sea is greater than would be possible upon the basis of the earth's convexity. We append the following statement handed to us by a citizen of Marco, Fla., an old resident, familiar with every point along the Florida west coast:

About the 29th of January, 1895, at about 4 p. m., Mr. S. E. Williams and myself, from Rabbit Key, a small island just north of Pavilion Key, and a little south of Chokoliska Pass, observed Cape Romano at a distance of about 25 miles. The timber on the cape was as plain to the unaided eye as if it had been only a few miles away with ordinary atmosphere. A little schooner yacht that had passed us and had been out of sight for over two hours, was in plain view, even to her hull. There was also a schooner that we had not seen before, sailing along the channel from Coon Key to Cape Romano; but I do not remember whether we could see her hull or not. The distance I should judge to be about 25 miles. I believe that we could have seen the above-named objects 10 miles farther, as we laid down over the deck of the boat, with our heads on a level with the water, and we could see the cape, schooners, etc., as plainly as when on the cabin. The sky was cloudy, and we could not see the sun. There was very little breeze at the time; what there was, came from the south. The reason I know that it was Cape Romano, is that there is no other land W. N. W. from Rabbit Key—the course.

Also, Mr. N. Walker, of Marco, and Robert Anderson, of Hotel Naples, saw Sanibel Light from the Naples dock, one night in March of the same year. I would make affidavit of the above, except as to distance, which may not be exactly correct.—Thos. E. Hart, Marco, Fla.

Remarkable Observations by Koreshan Geodetic Staff on the Gulf of Mexico and Naples Bay, Florida.

The objection had been so often urged by illogical critics, that tests upon inland waters were not satisfactory, that it was decided that observations be made upon the Gulf itself, the conformity of which to the contour of the earth no sane mind will question. Against the results of such

observations, no subterfuge can be brought to bear. For this reason also, the air line was surveyed upon the Gulf coast.

Six and one half miles lie between the points of the main land extending into the Gulf at Gordon's and Doctor's Passes. These points are long sand-bars, the elevation of which is equal to the high tide of the Gulf. On the point at Doctor's Pass, a large target $3\frac{1}{2}$ feet square was fixed upon supports; the top of the target was just 5 feet above low tide. On March 2, the mounted telescope was taken to Gordon's Pass, and the visual axis of the instrument was fixed at an elevation of $3\frac{1}{2}$ feet above low tide. At this altitude above the low tide level, all of the surface of the target was visible, and the white line of the sandy beach lying beneath it was distinct. No convexity was observable at this elevation. On the morning of March 3, at a time when the Gulf was calm, the observation was repeated. Also with the telescope fixed 2 feet above the water level, the target was still visible; the same at 18 inches, and finally, by reclining at the water's edge, with the axis of the instrument 12 inches above the water's surface, the target was still in view. Under the conditions of the last observation, if the water were convex, the horizon would be only $1\frac{1}{4}$ miles distant, leaving $5\frac{1}{4}$ miles of the surface, of the Gulf to decline downward,—amounting to $18\frac{1}{3}$ feet. As the target was only 5 feet above the low tide water level, it would be $13\frac{1}{3}$ feet *below the line of vision*. After deducting nearly one seventh of this declination to make up for the usual allowance for refraction, $11\frac{1}{3}$ feet would remain as the amount of depression of the target below a line extending through the visual axis of the telescope over the horizon, to the distance of $5\frac{1}{4}$ miles beyond the horizon. All of these obser-

vations were repeated in the afternoon, with the same results.

Experiments on Naples Bay.

A straight reach of $4\frac{1}{2}$ miles was found upon the smooth waters of Naples Bay. At the most southern extremity, a target of white cloth 20×30 inches was fixed upon an upright with cross-arms; the top of the target stood 2 feet above the high-tide mark, leaving a space of 4 or 5 inches to the water's surface. On March 5, at time of high tide, the Staff sailed to the farthest point northeast from which the target could be seen with the telescope. To the naked eye, the target was entirely invisible. The horizon seemed to occult the lower limbs of the belt of mangrove trees constituting the background of the views.

Over the water at the point of observation, the telescope was fixed at an altitude of 30 inches above the water, and through it the target stood out in bold relief. The instrument was then lowered to within 18 inches, with the same observed results. Afterward, at the height of 10 inches above the water, the *entire surface* of the target was still visible. Very careful observations were made and repeated with the telescope at this altitude. The target was clear cut and well defined, and even the space between the bottom of the target and the water was observable. Then, to make the test absolutely satisfactory and conclusive, the telescope was fixed upon the water's surface; with the instrument *almost touching* the water—indeed, it could not be placed closer without wetting the lenses—long and careful observations were made. There could be no mistake; the entire surface of the target could be seen, with a small dark line of the background appearing beneath it. The terrestrial eyepiece

was then exchanged for the astronomical eyepiece of greater power. The target was increased in size, and the relations of the target and the water's surface and the background came out still more noticeably. The object glass is 3 inches in diameter; the axis of the telescope was 2 inches above the water. On the basis of convexity, the horizon would be but one half mile away—for the declination for one half mile is considered to be 2 inches—leaving 4 miles of surface to decline from the horizon point, amounting to $10\frac{3}{4}$ feet. The target would have to be higher than $10\frac{3}{4}$ feet above the water in order to be seen; as it was at an altitude of only two feet, it would be $8\frac{3}{4}$ feet below the line of sight.

Water's Concavity Visible.

These are by far the most satisfactory observations made by the Geodetic Staff, because the tests were more crucial. The results were conclusive, as they afforded an *ocular demonstration of the earth's concavity*. A stake 2 feet in height was placed midway between the Observing Station and the target, with cross-bar at top of stake. With the telescope at same altitude, the cross-bar was observed to be a little below the top of the target, with the target foreshortened by perspective to a breadth equal to above one half the length of the stake. With the visual axis of the telescope 2 inches above the water, the cross-bar was seen to be in line with the top of the target.

Besides this observation, an absolutely satisfactory view was had of the water's surface itself. With the telescope placed absolutely level, the water appeared to slope gradually upward to the center of the telescopic field. With the objective end of the telescope placed a little upward from the true level, and with the water still visible near the ob-

jective end of the instrument, the *actual concavity of the water*—a midway depression—was clearly observable. This midway depression was at the point of the stake with cross-bar midway between the point of observation and the target, from which midway depression there was a gradual slope upward to the target. This view was obtained by the long terrestrial eyepiece, and also by the astronomical eyepiece, the concavity through the latter being the more marked. There could be no mistake as to the *concave* arc; the water was seen to be not convex; it did not appear to be a plane, but concave!

Principles of Mechanical Survey.

Successive Steps in the Logic of Geometrical Propositions and Applied Mechanics in Direct Demonstration.

THE FACTS of the observations and experiments presented in the preceding chapters are quite sufficient to demonstrate the earth's non-convexity, and to destroy the premise of the modern system of astronomy. To the mind capable of comprehending a few simple laws of vision, the observations on the water's surface as conclusively demonstrate that the earth is concave, as the more direct processes involved in the Koreshan Geodetic Survey. Indeed, the fact that we have *seen* the concave arc, and that it can be seen again under similar circumstances, is a settlement of the question for those who desire ocular demonstrations. From these facts, we pass to the consideration of the more direct processes in the demonstration of the earth's contour.

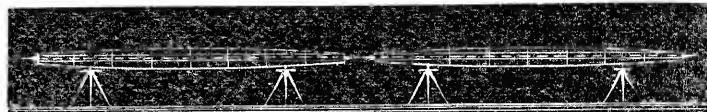
The most accurate measurements of the earth's surface

are made by mechanical means. The employment of apparatus for this purpose extends as far back as the history of astronomy. Starting with the simplest factor of linear measurement, the mind can at once conceive of the necessity of mechanical appliances. Space exists between any two points on the earth's surface, embracing a number of units of measure—_inches, feet, yards, etc. After a unit of measure has been agreed upon as the standard, its length must be preserved, and the means of preservation reduced to convenience of application or use; wood, iron or other solid material must constitute the embodiment of space units, as the rule, yard-measure, or the surveyor's chain. The process of measuring by all such appliances, is simply that of marking their lengths upon a surface, or by placing them end to end successively throughout the distance to be measured. The measurement of meridian arcs in geodetic survey does not differ in principle from these simple processes; all modern measurements of the earth involve the same factors.

Ancient and Modern Geodetic Apparatus.

The evolution of geodetic apparatus from the days of Ptolemy to the present time, has resulted from the obvious necessity of obtaining the greatest possible accuracy. Successive improvements have simply increased precision of adjustment. The first apparatus consisted of wooden rods placed end to end upon the ground; degrees of latitude and longitude have been thus measured, and miles of space determined. In modern times, similar apparatus were used by Picard, the French astronomer. Improvements were made by Osterwald, of Germany; by Mason and Dixon, of London, surveyors of the famous Mason and Dixon line in

America. Beccara mounted the sections of his wooden apparatus upon tripods; Cassini de Thury employed bars of iron with adjusting devices; Bessel, iron and zinc; Helmert, platinum and iridium, resting on iron trusses. U. S. geodetic measurements are made by compound bars of iron and brass, adjusted so as to compensate for contraction and expansion,—an invention of Prof. A. D. Bache. The rods are enclosed in spar-shaped cases made of wood, and mounted on tripods. The adjustments are made by contact of fine points, determined by a delicate index. Similar apparatus are in use by every government in the world,



Prof. Bache's Apparatus, Used in U. S. Geodetic Coast Survey.

engaged in geodetic work. All such apparatus are employed, not for the purpose of determining a straight line, but to accurately measure distances or meridian arcs; they involve adjustment of single points only. There is no attempt at rectilineation; but the fact remains that their use in modern times by the most skilful geodetic surveyors, proves that accurate adjustments are not only possible, but are actually made by simple contact of metal surfaces. The principles involved in the Koreshan Geodetic Apparatus differ radically from those involved in any other apparatus. It is susceptible of as great precision in linear measurement; and consideration of the principles which distinguish it in its form, purpose, and use, will make apparent its superiority over any other instrument of survey, as a means of determining the actual contour of the earth.

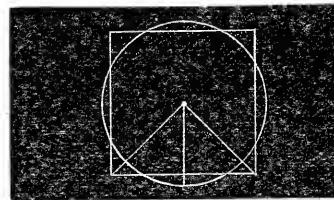
Fundamental Principles of Geometry.

We purpose in this and the succeeding chapters of this work, to make a direct demonstration of the concavity of the earth's surface, involving principles and processes so simple and so absolute as to be both easy of comprehension and conclusive. A direct demonstration proceeds from a premise by regular deduction. First, the premise must be known and absolutely proven, to the utter exclusion of *all* assumptions; and second, all factors involved in the train of logic must be direct and positive. In the line of sequences, we must take nothing for granted that would render our conclusion less certain than the premise. Our every step must be upon the sure footing of fact. We purpose to show that our premise, as well as resultant conclusion, is so firmly established as to exclude all possibility of doubt or denial.

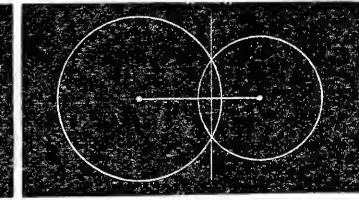
We begin at the foundation of geometry, and delineate for the mind, step by step, the inevitable conclusions. Geometry is the science of earth-measurement, from *γη*, earth, and *μετρον*, to measure. Modern geometry is a fragment of the true system of the relations and properties of form that existed in the past, from which its present name is derived. Every form has its opposite form, and every form has its co-ordinate form, possessing correlated functions. There is no transmutation possible without segmentation; in the evolution of a circle to its co-ordinated square, we have the intersection of secant and arc, and relation and bisection of radius and chord, as in the diagram A, on following page. The radius, which is perpendicular to the chord, bisects the chord, and also the arc which it subtends. The simplest angle to which relations of form can be referred, is the right angle. There can be no merg-

ence of one circle into another as in figure B, without the relations of the cross. If two circumferences intersect each other, the common chord which joins the points of intersection, is bisected at right angles by the straight line which joins their centers.

Our simplest premise, that the angles relating perpendicular and horizontal are equal, is susceptible of being

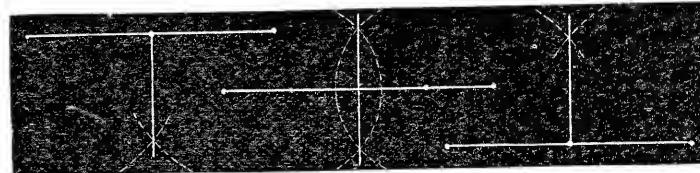


(A) Segmentation in Geometric Evolution.

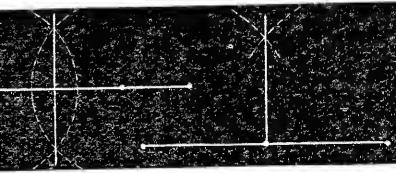


(B) Bisection of Common Chord and Lineal Axis.

known from a geometrical standpoint. The principles upon which right angles depend—by which they may be formed, also furnish a conclusive test and demonstration of the per-



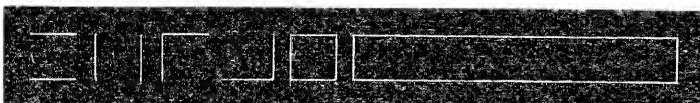
(C) Right Angles.



(D, E) Process of Demonstration of Right Angles.

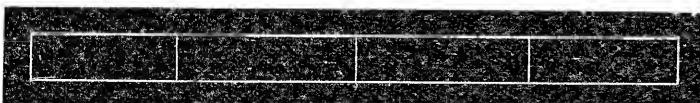
pendicular relations of straight lines. To draw a line at right angles with another, independently of a square as a guide, we may relate the points of intersection of arcs of merging circles to the line connecting their centers, as before illustrated, and as shown in diagrams D and E. Having demonstrated the principles of right angles, our premise is proven; and we are ready to take the next step in the line of sequential propositions and arguments.

From the above geometrical facts as a premise, we may construct a square having four right angles, four sides, two perpendicular and two horizontal parallels, because two straight lines which are at right angles with a given straight line, are parallel with each other. We can know as absolutely that the sides of a rectangle are parallel to each other, as we can know that two straight lines are at right angles, and by the same processes. If we place two rectangles of



Parallels. Right angles. Square. Rectangle.

equal breadth together, we form a new rectangle which is equal in area to the sum of the areas of the rectangles comprising it; the sides joined being in unity, the extremes are parallel. The other sides are as the extension of straight lines. If this is the result in the conjunction of two rect-



Conjoined Rectangles Forming Continuous Parallels.

angles, the same results would obtain if ten thousand rectangles were drawn end to end. There could be no possible deviation from a straight rectilinear direction, and we defy any mathematician to show that there could be!

Transposition from Geometrical to Mechanical Principles.

When we transpose the geometrical principles under consideration to mechanics, we have to deal with material

surfaces and angles instead of geometric lines which bound figures on paper; the principles are the same, for geometry treats of the relations of form of material things. When we carry our demonstratious from the realm of principles to principles applied, we do no violence to our conclusion. Such transposition is necessary to demonstrate the truth about the material form of the earth, or the character of its tangible contour.

The principles of right angles constitute the basis of mechanics as well as of geometry. Every mechanic considers right angles; he works with the square. The laws of these relations of form must be obeyed alike by the builder, engineer, and surveyor. If we place two mechanic's squares in line, the perpendicular arms will be parallel, and



Rectangular Metal Plates Forming a Straight Line.

may be closely fitted together. It also follows that if we place the perpendicular arms together, the horizontal blades will form a straight line; the results are identical. Two rectangular metal plates accurately trimmed and placed edge to edge will force the other sides to form a straight line, as in the accompanying diagram. If two plates joined will form a straight line, it follows that in the adjustment of three plates, the result would be the same; the same result would be invariable for every subsequent adjustment. Ten thousand plates joined would form a continuous rectiline. A straight line would be *forced* because of the fact that at every junction the surfaces joined would be parallel, with the horizontals at right angles; consequently the horizontals would necessarily be in line. Flagstones

upon pavements running for miles, are illustrations of the principles involved. If such squares laid in a straight line will join accurately the contiguous surfaces, it follows that if the surfaces were joined accurately, the pavement would extend in the same direction—in a straight line. There is no possible escape from this conclusion.

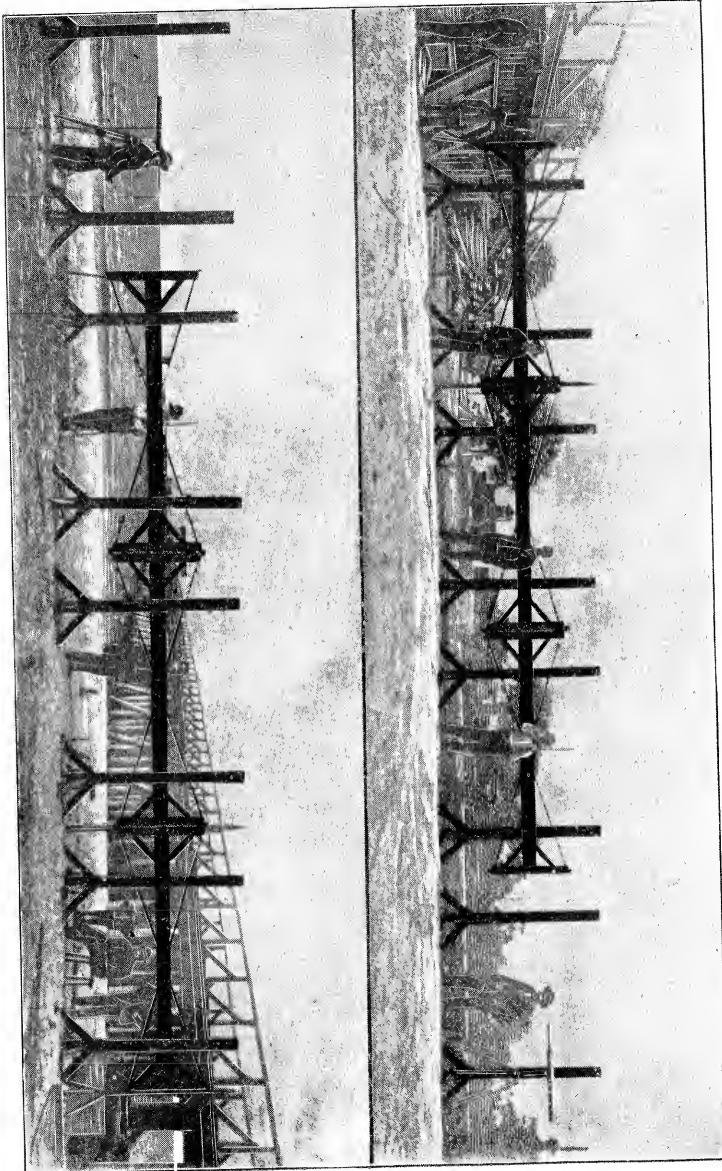
We may further illustrate this principle by reference to the survey of railroad tangents, which often extend for miles in a straight line, as related to the right and the left. These tangents are surveyed by means of the transit instrument, a small telescope mounted in a horizontal axis, and made to revolve perpendicularly. The instrument may be taken one mile from a given point, and adjusted so that the



Four-mile R. R. Tangent Surveyed by Revolving Transit on Horizontal, Right-angled Axis—Perpendicular View.

signal staff is coincidental with the perpendicular cross-hair. As the instrument has a fixed axis at right angles with the line of vision, or horizontal axis of the tube, if the tube be revolved on its right-angled axis, so as to point in the opposite direction, another staff, two miles from the first, may be placed exactly in line with the first staff and the line of collimation extending through the tube. In the accompanying diagram, presenting a view of the ground from the *vertical*, A is the point of the first staff; B, the telescope, CD, its axis at right angles with the line X; E is the point of the second staff, and Y is the new line extended from B, by revolving the telescope perpendicularly on its axis CD. If the axis be true, the lines X and Y will form a continu-

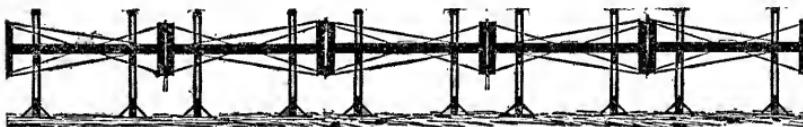
Starting from the Naples Dock, going South along the Gulf Coast. Upper view, looking East; lower view looking West.
Etchings Nos. 3 and 4.



ous straight line two miles in length, its extension being dependent upon a right-angled axis only three inches from either side of the line ! If such long distances can be connected together by so short a right-angled axis, it follows that if surfaces of rectangles of greater adjusting leverage are placed in conjunction, they are capable of extending absolutely straight lines.

The Invention of the Rectilineator.

We have followed the logical line of sequences from the fundamental premise to conclusions applied in practical mechanics. Every factor thus far considered is indisputable. We now purpose to describe the embodiment of all these

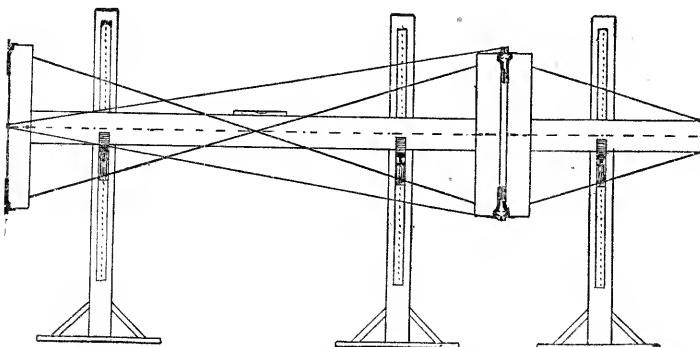


Five Sections of the Rectilineator in Adjustment.

principles of right-angulation and rectilineation in a tangible apparatus, the use and purpose of which can now be easily comprehended by the reader. The Koreshan geodetic apparatus called the Rectilineator (from *rectus*, right, and *linea*, line), an instrument for surveying a straight line, was invented by the writer in 1896, at the instance of the Founder of Koreshanity, for the purpose of demonstrating the premise of the Koreshan Cosmogony. This instrument is constructed so as to involve the factors of constancy, convenience of operation, and precision of adjustment, which we will briefly describe and illustrate.

The Rectilineator consists of a number of sections in the form of double T squares, each 12 feet in length, with

braced and tensioned cross-arms 4 feet in length. The length of the cross-arms is to the length of the section, as 1 is to 3. The material of which the sections of the Rectilineator are constructed, is inch mahogany, seasoned for *twelve years* in the shops of the Pullman Palace Car Co., Pullman, Ill. The horizontal bar of each section is 8 inches in width, while the cross-arms are five inches wide. Steel tension rods crossing the horizontal bar transversely and extending through the extremities of the cross-arms, are adjusted to maintain the constancy of the right angles. Finely trimmed



Cross-arms of the Rectilineator in Accurate Adjustment.

brass facings at the extremities of the cross-arms constitute the adjusting surfaces. Through flanges on the facings, ingenious screws were placed for securing the adjustments when made. As will be seen from the cuts in this connection, each section was supported by two strongly built, platformed standards, with adjustable castings to receive the horizontal sections between the body of the castings and adjustable cleats with clamps and set screws. The sections rest in the castings edgewise, the cross-arms extending perpendicularly, as shown in the picture.

Modus Operandi of the New Geodesy.

The principle involved in the operation of the Rectilineator, is as simple as that of placing two rectangular plates in contact, or laying two mechanic's squares together. Indeed, from the foregoing the mind with a mechanical eye can at once understand the method without further description. Supposing the first section accurately leveled and fastened to its standards by the clamps and screws, the reader is ready to imagine the adjustment of Section No. 2 to No. 1. This is accomplished by placing two standards in proper place in line with the preceding standards, and placing the castings at approximately the proper height. Section No. 2 is placed in position in the castings; set screws are turned so as to raise or lower the horizontal axis to approximate coincidence with the middle line of the first section. The brass facings are brought to within one fourth of an inch of contact. Operators of the set screws are directed to raise or lower the section to bring the hair-lines on the two sections exactly coincidental; fine lines are read with the microscope, and the section is carefully moved horizontally by the device for that purpose, until the brass facings are one fiftieth of an inch apart, as determined by a bristol card.

The precise adjustment is determined on the same principle that the thickness of paper is measured by the finest micrometers, differing only in the fact that the metal surfaces are adjustable, while the thickness of the celluloid card, .01 inch in thickness, is constant. In measuring the thickness of sheets of paper, the fact that when two sheets of paper pass between the fingers of the micrometer with equal friction, proves the sheets to be of equal thickness. The difference of a millionth of an inch can be determined

in this way. So, in case of adjustment of the sections of the Rectilineator, when the same card passes between the brass surfaces at top and bottom of the cross-arms with equal friction, it proves that the adjustment is *precise*; that the brass surfaces of Section 2 are in adjustment with those of Section 1, and that consequently the hair-line extending the whole length of Section 2 is in line with the hair-line on Section 1. The two sections are now ready for bolting; when bolted, the sections are firm and free from disturbance, while other adjustments are being made to Sections 2, 3, and so on. The same processes are repeated in adjusting Section 3 to Section 2. Only the first section is leveled, for the line to be extended is one which will not follow the curve of the earth, but one that will continue as a rectiline, the line which crosses at right angles the perpendicular at the point of beginning of the survey.

The straight line is *forced* by right-angulation, from the first section forward to the terminus of the line. Every succeeding adjustment being exactly like the first, necessitates the conclusion that every cross-arm is parallel with all others by virtue of actual contact, and that consequently the hair-line of each section is an extension of the hair-line of each preceding section. This conclusion is so simple, and so in keeping with our premise at the beginning of the argument, as to be *absolutely conclusive*. So far we have taken nothing for granted, and have asserted only that which is *known* by every mathematician and mechanic to be true. If we can *know* that right angles are equal, and they are invariable and constant in their geometrical functions, we can also *know* that the principles of right-angulation and mechanical rectilineation are one and the same.

The unique principles and points of the Rectilineator,—

factors of certainty to be considered in the line of evidences and arguments previous to our final conclusion, may be summed up as follows:

It is constructed upon geometrical and mechanical principles. Proceeds from a known basis of measurement with invariable results.

Compensates for contraction and expansion.

Eliminates atmospheric refraction and visual perspective.

Furnishes a constant basis of reference for levels, tests, and measurements, and for ascertaining ratio of curvature of the earth.

Methods of operation and results obtained can be understood by the simplest mind.

It does not require a "scientist" to interpret the results.

It has two points of adjustment for each cross-arm—finely trimmed brass facings.

Adjustments are made secure from tampering hands by bolts; each adjustment is witnessed by every operator.

Standards are platformed, to obviate settling. Other apparatus are mounted on tripods, terminating in sharp points extending into the ground.

A complete system of reversals of the sections corrects any possible inaccuracies or deviation of right-angles in the cross-arms. This system makes impossible the chance of any predetermined plan to construct the instrument so as to run a curved line.

The sections were subjected to all the known crucial tests of right angles, and the lines were read with microscope.

In trial surveys of a given distance and return, the hair-line axis returned to hair-line on brass plate on firmly set stake at starting point, thus proving the perfection of the instrument and the possibility of absolutely accurate adjustments.

From the above, it will be seen that the principles upon which the Rectilineator is constructed, differentiate it from all other geodetic apparatus ever used, in the simple feature that it has *two* adjusting points for each cross-arm instead of one,—as the end of a rod. Its object is to *force* a straight line instead of following one to measure its length. It is not intended to survey a straight line as related to the right or left, but an *air line* from the vertical point of any given perpendicular, in accordance with the plans and specifications presented in the previous chapter. Follow-

ing the line of argument from the fundamental premise to the embodiment of the principles in a Geodetic Apparatus, we are ready to present the facts of the actual demonstration achieved through its use. On the evening of March 17, 1897, the Rectilineator stood at the beginning of the line of survey, at Naples, Fla., ready for the first adjustment in the *first* and *only* geodetic survey ever made in the history of the world, to determine whether the earth is flat, convex, or concave!

The Koreshan Geodetic Expedition.

Factors Involved in the Measurement of Meridian Arc in the Florida Coast Survey.

HAVING demonstrated the principles of rectilineation and shown how they are to be applied geodetically, it now devolves upon us to show the actual relation that the rectiline surveyed by such processes, sustains to the actual meridian arc $8\frac{1}{2}$ miles in length. The relations of the chord and arc we have already considered, the principles of which belong to the direct processes of demonstration which we have introduced and maintained from the premise. We must now deal with the factors involved in the processes of relating a tangibly constructed chord to the great arc of 25,000 miles circumference. In order that these factors may be thoroughly understood, and the strength and character of our evidences appreciated, it is necessary that the reader consider our work of preparation upon which the accuracy of the survey depended, our preliminary surveys, and the methods employed in obtaining accurate measurements of the Gulf level, which is subject to daily tides.

Naples, a beautiful winter resort on the Florida west coast, (longitude $81^{\circ} 55' 25''$ west, latitude $26^{\circ} 4' 30''$ north,) was selected as the Operating Station for the following reasons: The coast line, north and south, was comparatively straight for a number of miles; the climate admitted of operations during the winter months, and the site was near the Koreshan Co-operative and Communistic Colony at Estero, Lee Co., Fla. The Geodetic Staff of the Koreshan Unity reached the Operating Station January 2, 1897, with apparatus, and all appurtenances and instruments, and plans of operations, which required five months' careful observations and accurate work to execute. Details of observations on the water's surface, by means of the telescope, have been presented in the preceding chapters.

Accuracy of the Rectilineator Proved.

In the direct line of logical sequences, demonstration of the accuracy of the apparatus employed, is demanded; this is absolutely necessary to definite conclusions. It is easy to be seen that if the earth is concave, only accurate apparatus could determine it to be so. The duty that we owed to the Founder of the Koreshan System, to ourselves, and to the world, demanded *precision*, and herein we found a powerful incentive to the greatest possible accuracy. Caution forced us to be sure that such an apparatus would admit of practical and precise work, so that months of our time, as well as mental and physical energy, might not be thrown away in a futile attempt to settle the question. It was necessary to submit the apparatus to the most crucial tests that could be devised in mechanical science. It was a new apparatus, and if it was inaccurate, it must be made accurate; our operators must be drilled and skilled by actual experience with

the apparatus, before precise adjustments could be expected; for "practice makes perfect." Several weeks were devoted to practice manipulation of the apparatus and trial surveys.

Proof of mathematical results is obtained in reversing the operations, and referring the final results to the first. The cross-arms on several sections must be proven to be at right angles with the longitudinal hair-line or axis of the sections of the apparatus. The inventor and mechanical experts devoted four weeks to test and adjustment of the right angles; six series of tests were applied, and each section was reversed, end for end, and turned over fifty times on the special platform with mechanical devices for measurement and reference. Points and the finest possible lines engraved on steel and brass plates, to which adjustments were referred, were read by means of the microscope; in this way, the very slightest variation of angles could be detected. When the hair-line of each section, in the different positions of reversals in which they could be placed, fell upon the same point under the microscope, it was a mechanical demonstration that the cross-arms were at absolute right-angles with the hair-line on the horizontal bar.

System of Reversals and Final Tests.

During the mechanical tests of the apparatus and trial surveys, an ingenious system of reversals of the sections for use in actual survey, was invented at the Operating Station by Rev. E. M. Castle, of the Geodetic Staff, and member of the Visiting and Investigating Committee, and witness of important operations. This system consisted in turning over each section at its every alternate adjustment; in this way any inaccuracy in the right-angled cross-arms, whether great or small, would in the course of a few adjust-

ments, be made to correct itself. The proposition is self-evident, and resulted in the geometrical and mechanical certainty of obviating the effect of any cross-arm varying from absolute right-angles, and prevented any errors arising from such a source. The Check Record Books of the Staff show that this system of reversals was faithfully applied throughout the entire line of survey.

After all the adjustments were completed, and the system of reversals was devised for application, and before the actual line of survey was commenced, the apparatus was subjected to one of the most *crucial* tests possible to impose upon it. A single line connects two points. By means of approximate right angles, we might extend a line from a given point to another; but so long as the right angles are an unknown quantity, they cannot constitute a basis of reference of the results. In the case of our apparatus, the cross-arms themselves were being subjected to test. The fact that we extend a line for a given distance proves nothing, unless there is a basis of proof preceding the survey; without the *final test*, a slight deviation might remain, which escaped other methods. To ascertain whether or not there was, to what extent, and in what direction a trial line has deviated, we must mechanically relate the results to the point from which the line was projected. On so large a scale, this can only be done by taking the last adjustment in the forward line, as the first adjustment in the return, and *retrace* the direction to the beginning; if there had been a deviation from a rectilinear course, it would be shown when the *original point* was reached; if it returned to the *same point*, the cross-arms were at right angles, and the apparatus absolutely accurate. 228 feet were measured; a stake was fixed at the beginning, with brass plate bearing

fine line coincidental with the horizontal hair-line of the apparatus. 19 forward adjustments were made, and the direction retraced; at the last return adjustment, the section was found to be in exactly the *same place* as originally, with the hair-line precisely over the fine line on the brass plate. The results were determined by observations with the microscope; the apparatus returned to the same point, after traversing the space of 456 feet, without a deviation of .0001 of an inch. This test was in accordance with the plans of critics on the field of observations, representing the Copernican System, who were doing all in their power to prove the instrument inaccurate. The test was applied, and the demonstration places the fact that the apparatus was accurate and capable of surveying an accurate air line, beyond all doubt or denial!

Preparations for the Geodetic Survey.

For several weeks previous to the beginning of the geodetic operations, the numerous tourists from the North and from Europe, and the residents of Naples, standing upon Col. Haldeman's long dock, saw two 15-foot, 2x6 inch perpendicular stakes outlined against the southern horizon. They marked historic points along the line of the first survey that determined the true contour and ratio of curvature of the earth's surface. From the fixed stake on the approach of the Naples dock, the dignified stakes marked the direction of the meridian line. Standing in the long line like sentinels of success, were the lesser stakes that indicated shorter intervals of space. We had conducted a coast survey; with surveyor's instruments, a line or path along which the Rectilineator was to be moved section by section in precise adjustments, had been measured, and eighths of miles marked

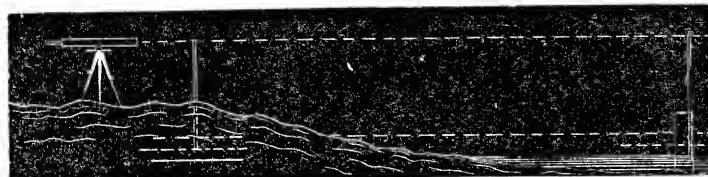
by stakes, for $4\frac{1}{2}$ miles down the coast. As the air line was to be straight, and as the shore line was a little irregular, the land elevation above the water level varied from 3 to 5 feet. Excavations were necessary, and much other work of similar character, to remove all obstructions and clear the way for convenient and uninterrupted operations when the adjustments began. We refer to these incidental preparations, in connection with all other factors involved in obtaining the results, to give something of an idea of the magnitude of the undertaking we had before us; to show that care was taken to attain accuracy; that we were faithful and persistent in the execution of our plans; that we understood what was required to determine the facts involved in the question,—geometrically, mathematically, practically, and mechanically; to manifest to the reader that we faithfully detail the entire proceeding—all of the obstacles and difficulties, and how they were removed, as well as demonstration of principles and facts of measurements—to prove not only that the survey was made, and made honestly, and success achieved, but also to show that in consideration of the fact that it was the first attempt in the history of the world to make such a survey, its accomplishment is a marvel!

Prof. Morrow's System of Uniform Tide Measures.

We have shown through definition of the laws of hydrostatics, that the contour of the water's surface conforms to the general contour of the earth's surface; consequently, its natural level constitutes the definite curve to which all our geodetic measurements must be referred; that is, after relating that curve to a tangible air line or rectiline, the arc of the water's surface is considered as the curve measured,

from which measurements we are to deduce a definite ratio of curvature. The fact that it is impossible to operate on the water's surface and only on the land, necessitated the employment of a system of hypsometry (from *ὑψος*, height, and *μετρον*, to measure) for the measurements of the altitude of the surveyed line at every eighth division of a mile throughout the line of survey.

The average difference of tide levels on the Florida coast is about $3\frac{1}{2}$ feet. The mean tide level is a point midway between high and low tide levels. It was necessary to ascertain this point with all possible precision, which we did by means of a tide register, consisting of a caisson, with

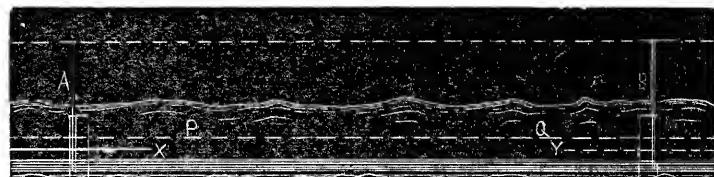


Transferring 128-inch Vertical Altitude to Naples Beach—Cross-sectional View, Looking South.

perforations, and a tide staff measure, set in the Gulf, so that its bottom was below the level of low tide, and its top above the level of high tide. The perforations admitted the water from beneath at normal pressure, and prevented wave fluctuations; thus the water in the caisson was perfectly still, and only rose and fell with the Gulf tide level. When the mean tide level was obtained, it was marked upon the stationary tide register and became the fixed point to which all other measurements of water level were referred, as we will show. We desired to project a line from the vertical altitude of 128 inches above a definite instead of a fluctuating level; consequently, by means of the tide staff extending

vertically from the caisson, that altitude was transferred to the land elevation where the survey began, by application of the principles of right angles, as in the Cross-sectional View. The geodetic level was adjusted to cause the vertical angle to intersect the tide staff at altitude of 128 inches; we then had 128 inches altitude as a fixed point on the beach, as the altitude of the commencement of the air line.

As the mean tide level in the stationary tide register became a known and fixed quantity, it was taken as a basis of reference for the measure of the altitude of the air line at all station points along the entire line. We may illustrate this process of referring all other tide measurements to the

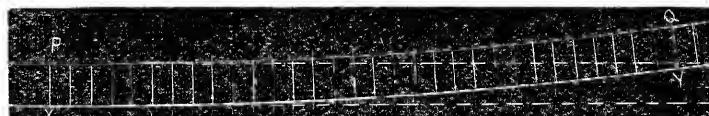


Process of Referring all Measurements to Stationary Caisson.—Land Elevation, Looking East.

original, by diagramming tide staff on stationary register, and tide staff on portable register at any other given point. XY is the mean tide level, which is marked as a fixed point on staff A, the top of which is the altitude of 128 inches above mean tide level, which is also indicated on the beach as shown on preceding page. The tide staff A is divided into feet and inches.

Now what we desire to make clear to the reader, is how we could obtain the same vertical altitude with accuracy, at any other point along the line, by measurement of altitude staff B with the Gulf level constantly varying from the mean tide level. We will take the measurement on tide

staff A, for instance. At the time of measurement, say 2 miles from the beginning, suppose the water level was 12 inches *above* mean tide level, leaving 116 inches of tide staff A, extending above the water at the stationary caisson. The line PQ will represent the 116-inch measure on the staff. Now if staff B, with inches marked from the vertical point the same as A, be fastened to Register B, 116 inches above the line PQ, it will have the same vertical altitude as A. The water level in caisson A, as indicated on the staff A, was received at B by means of our Code of Signals, so that the adjustment of staff B at the proper altitude, or corresponding height above the water, was made at the same instant. In this way, no matter whether the



The Datum Arc of Mean Tide Level, Tide Staffs, and Secondary Datum Line.

measurements were taken at high or low tide, or at *any* water level between the two extremes, the results were accurate, because the *fixed* point at A was the constant and unvarying basis of reference. When the vertical altitude of staff B was ascertained, the corresponding vertical angle was transferred to the land elevation, the same as illustrated in the cross-sectional view of the first tide measure.

Measurements of same vertical altitude above the water were made for 25 points along the beach from the beginning to the extremity of the line; when completed, the 128-inch uniform vertical altitude of the 25 tide staffs, necessarily formed a line *parallel* with the water's surface, as in the above diagram. XY is the water's continuous surface

at mean tide level; the curved line PQ, represents the 128-inch vertical altitude of the tide staffs. XY was our datum line, to which the altitude of the air line above the water at every successive eighth of a mile tide staff was referred. The hypsometric principles involved in these measurements by means of the tide staffs are scientific, and the process admitted of *accurate* measurements. With the line PQ established as a *fixed* line parallel with the mean tide level or datum line, measurements were made from the upper line of reference with equal accuracy; the upper datum line was constantly above the water, and on the land elevation, while the lower datum line was sometimes beneath the tide waters; we found it more convenient therefore, to measure from the vertical points than from the datum line beneath the vertical points. When our datum lines were established, the preparations for the survey were complete. The ground elevation on the beach on which the line was extended, was on the average about $4\frac{1}{2}$ feet above mean tide level; at the beginning of the survey, the highest land elevation, the hair line on the apparatus measured 53 inches above the ground.

Levels, Plumbs, Appurtenances, and Records.

Inasmuch as the Geodetic Survey was extended through space by means of right angles, regardless of any other method of determination of a straight line, and regardless of the consequences, it is obvious that it was not extended by any leveling process. By reference to cut No. 4, Plate 1, it will be seen that the rectiline would vary from the water level in ever-increasing angles from the beginning to the end of the line. If the earth were convex, the line at the end of 4 miles would be higher than at the beginning,

and the angles would be *divergent* from the beginning; if concave, *convergent* from the beginning. We used levels for two purposes: First, to level the first section; second, to ascertain and record the variation of the sections from the water horizontal at given points along the coast. By reference to the "Comprehensive View of the Air Line," the reader will understand how the plumb-line should hang with reference to the right-angled bars first, if the earth were convex; second, if it were flat; and third, on the basis of the concavity.

The leveling of the first section was the point for the exercise and application of the greatest skill and accuracy; the first section must be *accurately* leveled! For this purpose we applied one of the finest and most sensitive spirit levels obtainable. In connection with this we had our 12-foot Mercurial Geodetic Level, invented by the writer, especially for this survey. Being 12 feet in length, it was susceptible of being used with great accuracy and precision. Applied to the first section, the spirit and mercurial levels agreed. The plumb was also applied to the cross-arms of the first section, as additional corroboration. The horizon was also observed in relation to the long straight-edge formed by a number of adjustments, and the straight-edge was perfectly parallel with the clear-cut water line of the Gulf of Mexico, viewed from a point three or four rods back of the apparatus, so as to place the under edge of the straight-edge and the water line in apparent contiguity. The leveling was a careful, painstaking, and successful work, witnessed by every member of the staff, and finally pronounced perfect at 8:50 on the morning of March 18, 1897. From thence the line was projected on the basis of the principles which we have demonstrated.

Constantly at the hand of the writer, moved along the line as the work progressed, was the convenient chest with thermometer, microscope, calipers, rules, compass, spirit level, triangles, protractor, telescope, thumb bolts, adjusting gauges, celluloid test card, etc., and the books of the staff, for the purpose of making the most accurate observations and measurements, and recording the same on the field of operations in the presence of all the witnesses. Every item of adjustment, test, observation, and measurement was checked in the Check Record Book, and described in detail in the Daily Record Book, to which are appended the signatures of all operators and witnesses. The facts of preparation, measurements, and survey contained in this work are taken today from the records, attested and sworn to by the entire Geodetic Staff and the Investigating Committee.

Personnel of the Staff, Investigating Committee, and Corps of Witnesses.

In our line of argument, it is necessary to introduce the Operators and witnesses, that the reader may judge of the character of the testimony concerning the facts observed; and to this end we publish the names of all those connected in any way with the experiments and survey conducted on the Florida coast. The operations and observations were not witnessed by the Operating Staff alone. Appended to this work are the statements of the Visiting and Investigating Committee, concerning the facts observed when the air line was projected into the water on May 5, 1897, and the repetition of the same on May 8; also the sworn statements of the Operators and Watchman concerning the precautions taken to prevent any one tampering with the

apparatus or its adjustments. In the list of the Operating Staff, we briefly mention the position each occupied, and the class of work to which each was assigned:

DIVISION A.

PROF. U. G. MORROW, Geodesist, head of the Expedition; Inventor of the Rectilineator; in charge of the Field Operations, Experiments, and Observations; director of Hypsometric Operations; special Newspaper Correspondent; directed and tested every Adjustment and Measurement of the entire Survey, and personally checked same in the Record Books.

*L. M. BOOMER, General Manager.

REV. E. M. CASTLE, of the University System of the Koreshan Unity; inventor of the System of Reversals of sections of the Rectilineator, and witness of important operations.

GEORGE T. ORDWAY, Operator; manipulated Set Screw No. 1; detached each rear section, and transferred same for forward adjustment; made reversals in accordance with the Formula of the Castle System; signaled tide measures from Stationary Caisson.

J. JACKSON WILLIAMSON, Assistant Operator; manipulated Set Screw No. 2; assisted in detachment of each rear section, and in the reversals; Watchman.

*H. B. BOOMER, Secretary.

DIVISION B.

GEORGE W. HUNT, Engineer; in charge of Division B, operating in advance of Division A; directed emplacement of the 8-foot platformed standards, and adjustment of castings which received the sections of the Rectilineator; in charge of all excavations, and setting of Tide Staffs.

P. W. CAMPBELL, Mechanic and First Assistant Engineer; Assistant Watchman.

ALLEN H. ANDREWS, Second Assistant Engineer; Assistant Watchman.

CORPS OF STAFF ASSISTANTS.

Gustave Fabre.	Leroy L'Amoreaux.
Charles Mealy.	Laurence Bubbett.

VISITING AND INVESTIGATING COMMITTEE.

VICTORIA GRATIA, Pre-Eminent of the Koreshan Unity.
Rev. E. M. Castle, of the Koreshan University, Estero, Fla.
Prof. O. F. L'Amoreaux, A. M., Ph. D., 31 years in Chair of Languages, Wheaton College, Wheaton, Ill.

C. Sterling Baldwin, M. D.

Mrs. Ada Welton.

T. R. Ehney, Postmaster at Naples, Fla.

W. D. Puerifoy, Naples, Fla.

S. L. Green, M. D., Marco, Fla.

OTHER WITNESSES AND VISITORS.

Hugh McDonald, Covington, Ky.

Mrs. Hugh McDonald, Covington, Ky.

Miss Ann Haldeman, Louisville, Ky.

Miss Lucy Lemon, Louisville, Ky.

Miss Elsie Frederickson, Louisville, Ky.

J. T. Smith, Springfield, Ill.

Mr. Strauss, of Louisville *Courier-Journal*.

Capt. Robert Gilbert, Estero, Fla.

Richard Gilbert, Punta Rassa, Fla.

Mrs. Elizabeth Robinson, Chicago, Ill.

R. B. Gilbert, Punta Rassa, Fla.

Mrs. Esther Stotler, Estero, Fla.

Miss Rose Welton, Estero, Fla.

Carl Leutich, Estero, Fla.

Lester Wintersgill, Estero, Fla.

G. R. Calhoun, Plant City, Fla.

Thos. E. Hart, Marco, Fla.

D. N. Walker, Marco, Fla.

N. Walker, Marco, Fla.

Miss K. M. Large, Naples, Fla.

Neal Harris, Marco, Fla.

*Called to Chicago by telegram announcing the death of Mr. L. S. Boomer before Survey began; assisted in preparations.

Results and Inevitable Conclusions.

Details of Measurements and Extension of the Air Line Into the Water.

"Hew to the line, let the chips fall where they may."

WHEN we suspended the plumb-line at the first adjustment of the Geodetic Apparatus, we established beyond all doubt the direction of the earth's radius, or the perpendicular at the initial station. Poised upon the pivot of adjustment, the bubble in the graduated vial of the spirit

level measured equal distances from the central division of the scale. The mercury in the 12-foot Mercurial Geodetic Level stood at equal altitudes in the perpendicular tubes, in demonstration of the fact that the level is at right angles with the perpendicular radius of the earth. The plumb and level invariably tell the *truth*; they are silent witnesses testifying from the standpoint of *unseen energies*, which man cannot bribe nor change to suit a theory. The bubble-shifts at the various stations throughout the line of survey, whether corroborating or denying preconceived opinions, must be accepted as conclusive.

With perpendicular and horizontal definitely fixed at the starting point in our survey and in our argument concerning the evidences afforded in the line projected, we have factors which constitute an indisputable basis of reference. Once leveled, the direction of our line was *fixed*, from which it was not possible to depart; the bolts which held together the brass facings on the adjusted right-angled cross-arms would admit of no change. The very principles of construction of the apparatus compelled the maintenance of the rectiline from the beginning to the end. The line projected must terminate somewhere, either in space or in the water, according as the earth would be found to be convex or concave. If the earth were convex, the line would extend into space, as before explained; as the line would proceed, the bubble in the spirit level would shift at each successive application, more and more toward the *south* from the central division of the scale, while the plumb-line hanging in the direction of the perpendicular or the earth's radii at the various stations, would hang toward the initial station. If concave, the conditions and positions of the levels and plumb would be the *reverse* of those on a convex

surface; if flat, they would be the same continually, as at the beginning of the line. By reference to Cut 4, Plate 1, the relations of the plumb to an extension of the horizontal at the initial station may be clearly seen, as regards the convex, the flat, and the concave theories. In conjunction with the tests of levels and plumb, the observations of the Gulf horizon were made, as before explained. At the beginning of the line, the straight-edges of the apparatus when in adjustment were parallel with the horizon. On a convex arc, the straight-edges and the horizon line would appear to converge toward the *north* with increasing angle, as the line proceeded; if flat, their original parallel relations would be apparent throughout the line; and if concave, the apparent convergence would be toward the *south*, or in the direction of the movement of the apparatus.

The Testimony of Levels, Plumbs, and Horizon.

We present the evidences of the readings of the levels, plumb, and horizon, because the evidences afforded by these means are independent of any measurements of altitude of the line surveyed above the mean tide level; we offer them as corroborative of the measurements obtained. It will be found upon comparison with the table of measurements in this chapter, that these evidences are in harmony with the measurements and facts which constitute the factors of our direct demonstration. The spirit level was applied in test of position of sections at every twelfth adjustment throughout the line. For the first several tests, the divergence of the water line and the air line was too slight to be detected by means of the level; and it was not until near the end of the first eighth-of-mile division of the line that any difference was thus manifest. The bubble had shifted a little—toward

the north, or rear section of the apparatus. From the first point of the manifest deviation until the end of the line, the angle increased proportionately to the distance traversed.

This was corroborated also by the position of the plumb-line, and the observed increase of angle between the straight-edges and horizon, always converging toward the south. We have thus far referred to these angles in general terms; the question would arise, What were the actual angle measurements as ascertained by the levels, plumb, and horizon, at points where all these tests were applied? If there were variations, how great or small were the variations? The divisions on the graduated scale of the spirit level were .075 of an inch apart; the plumb was suspended from top of the 4-foot right-angled cross-arms, and the angle read on plate at the bottom of the cross-arms; the 12-foot mercurial level determined the angle for 12 feet, while the observed horizon was related to straight-edges 36 feet in length, and therefore determined the angle for 36 feet. We give below the results observed at the end of the first mile, the second mile, and at end of $2\frac{3}{8}$ miles, at last adjustment of the apparatus in the southerly direction.

SPIRIT LEVEL, shift of bubble toward north end of the vial, as measured on the graduated scale:

1 mi., .0375 in.; 2 miles, .077 in.; $2\frac{3}{8}$ mi., .089 in.

PLUMB-LINE, measurement on arc of 4 feet radius, as related to right-angled cross-arms:

1 mi., .015 in.; 2 mi., .037 in.; $2\frac{3}{8}$ mi., .044 in.

MERCURIAL GEODETIC LEVEL, indicating angle of divergence of air line and horizontal at points of test, for the space of 12 feet:

1 mi., .042 in.; 2 mi., .094 in.; $2\frac{3}{8}$ mi., .115 in.

THE HORIZON, indicating angle for space of 36 feet, as accurately as could be measured with the eye at a distance of 15 feet from the apparatus:

1 mi., .15 in.; 2 mi., .34 in.; $2\frac{3}{8}$ mi., .51 in.

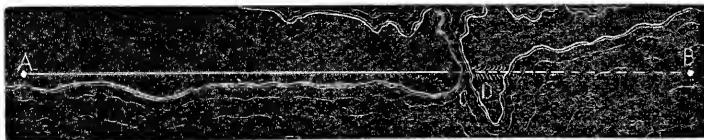
These readings, taken as a basis of mathematical calculations, will be found to very nearly conform to the relations of chord and radii, over an arc of 25,000 miles circumference, and are evidences of the angles increased in about the proper ratio, as the surveyed line progressed from the beginning to the end; the chord, tangibly constructed, was constantly converging with the arc, as we have shown by the four independent sources of evidence; and we now purpose presenting such a net-work of facts of absolute and direct demonstration, as to render our position invulnerable, and our premise impregnable.

Details of Visual Projection of the Air Line Over Gordon's Pass.

From the Naples dock looking south, a white line in the Florida sand marks the line of excavations for emplacement of the standards of the Rectilineator, extending to Gordon's Pass, in the southern horizon. This white line is the actual mark we have made in the world,—our path to success, the route of demonstration. Carefully and patiently for eight weeks we followed this course, making precise adjustments, and executing painstaking, careful, tedious, and trying work by which the facts we are publishing were obtained. We diagram the Air Line, the coast line, and the water's surface to the extremity of the line, covering the space of $4\frac{1}{8}$ miles. A is the point of beginning of the line at altitude of 128 inches; B is the point where the rectiline extended into the waters of the Gulf of Mexico. The coast line can be easily traced without lettering; C is Gordon's Pass; D, the long sand-bar extending into the Gulf, through an excavation in which the Air Line was projected; the excavation admitted of

vision of the water horizon from the $2\frac{1}{2}$ mile station, where the final adjustments of the apparatus were made.

All of the definite measurements of altitude of the line and of the minute angles of divergence, were made with reference to the position of the apparatus from the beginning of the line to the end of the adjustments, covering a distance of 13,200 feet, or $2\frac{1}{2}$ miles; the line was tangibly built for this distance. The cross-arms extended 2 feet below the horizontal axis or middle line of the sections, and at the end of $2\frac{1}{2}$ miles were within 7 inches of the ground; the axis of the apparatus was rapidly converging with the water level. We had manipulated the apparatus as far as



Map of Coast Line and Gordon's Pass, Showing Course of Air Line and Point of Projection Into the Gulf.

practicable and possible, within the limits of our conveniences for operation from the starting point of 128-inch altitude. The Air Line at this point was 54 inches nearer the water's surface than at the beginning; whereas, if the earth were convex, the line would have been 54 inches above the vertical point of the original 128 inches, making a difference of 108 inches, or 9 feet, in the position of the apparatus from that really obtained.

The Extension of the Air Line Into the Water.

For the reasons given above, the extension of the Air Line into the water, or a continuance of the line in any direction, we had to employ another method of survey. As

the line would extend across the Pass and over the sand-bar, through the excavation, and into the Gulf south of the Pass, it was necessary to finish the line by a visual process. In order that this might be done as accurately as possible, obviating any errors that might arise from the adjustment of such an apparatus as the engineer's level, parallel with the horizontal axis of the apparatus, *two* points on the Air Line surveyed by the apparatus, one-eighth of a mile apart, were taken as the sighting stations; these points were Tide Staffs Nos. 19 and 20. On these staffs we had left the record of the altitude of the Air Line. The large telescope, provided with horizontal cross-hair, was adjusted at Staff No. 19, so that its line of collimation was at the same altitude as the surveyed line at that point. On Staff No. 20, one eighth of a mile distant, a steel strip was fixed horizontally at altitude of Air Line at that point, upon which to train the telescope. When the telescope was adjusted so that the cross-hair was in line with the steel strip, the simple matter of projecting the remainder of the line visually is easily comprehended. At these distances from the beginning of the line, with the tending divergence toward the water, refraction and visual curvilineation would involve so small a factor of departure from the rectiline for the remaining distance, as to give an approximately correct reading on the staffs to the end. Through the telescope, the steel strip and the cross-hair were observed to a point *below* the Gulf horizon—the visual line extending into the water south of the Pass.

The following diagram gives a perpendicular view of the line, showing the land elevation. XY is the arc of curvature; A, the beginning of the survey; B, the point of projection into the water; C, the Pass, and D, the sand-

bar through which excavation was made ; E, Tide Staff No. 19, with telescope ; F, Tide Staff No. 20. The continuous line is the line surveyed by section adjustments ; the dotted line is the portion of the Air Line projected visually. For the purposes of measurement and calculation of ratio of curvature, it was necessary to locate the point on the Gulf where the line extended into the water. This was done by directing our sail-boat beyond the Pass, in line with the telescope axis. When the lower part of the hull appeared just above the cross-hair, it was obvious that the point was marked. By means of our Signal Code, the observer at the telescope transmitted the information that the point was

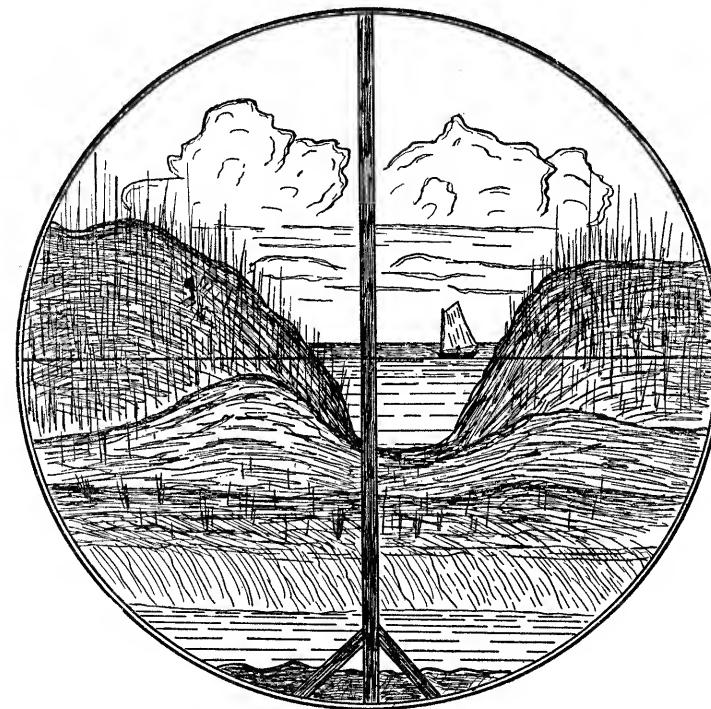


Profile View of Land Elevation, Showing Process of Visual Projection of Air Line into the Gulf.

reached by the sailors in the boat, and the occupants replied, giving the distance as $4\frac{1}{6}$ miles from the stationary caisson, or $1\frac{1}{2}$ miles south of the Pass, as indicated by the tide staffs along the beach.

These observations were participated in by the Visiting and Investigating Committee, whose testimony we append at the close of this work, as well as the testimony of the Operating Staff, who conducted a repetition of the observation three days later. At the time of the observations, sketches of the telescopic view were made by the writer, showing the boat on the Gulf where the Air Line was projected into the water, as the converging chord of arc ; and for the benefit of the reader, we herewith produce sketch,

showing the cross-hair in telescope at Tide Staff No. 19, the picture of Tide Staff No. 20, with steel strip attached in line with the cross-hair. The visual line connecting the same, extending beyond and projecting into the water,



SKETCH OF THE TELESCOPIC VIEW.
Showing Extension of the Air Line into the Gulf through Excavation South of Gordon's Pass; also relation of Cross-hair and Steel Strip to Horizon and Boat in the Distance.

completed the experiment, the results being proclaimed by the Founder of the Koreshan Cosmogony, for twenty-seven years previous to the demonstration on the Florida west coast.

For the purpose of further testing the apparatus, we retraced the surveyed line by means of the apparatus, for the distance of one half mile, taking the last forward adjustment as the first adjustment on the return survey. If the hair-line of the apparatus returned to the same point on the tide staffs, it would be a further demonstration of the accuracy of our work. An error of deviation from the rectiline would be applied on the return, and would consequently be made manifest by having fixed points as bases of reference, such as were recorded upon the tide staffs on the forward survey. Upon return to the staffs the hair-line of the apparatus fell upon nearly the same points, as per the figures in the table of measurements under the following subhead, demonstrating the remarkable accuracy and efficiency of the apparatus employed to make the first direct test of the earth's surface in the history of the world.

Facts of Measurement of Altitude of the Air Line on 25 Tide Staffs.

As the Rectilineator was moved forward, section by section, in the direction of the tide staffs, the relation of the hair-line of the sections to the 128-inch altitude, or secondary datum line, was easily obtained by measurement. At no place throughout the line of survey did the sections rise above the original 128-inch altitude. At the end of the first 660 feet, where the calculated ratio would indicate .125 of an inch curvation, the hair-line of the apparatus fell .15 of an inch below the 128-inch altitude, being a difference of only .025 of an inch. This is in easy contrast with the conditions that would result if the earth curved downward instead of upward. If it were convex, the hair-

line of the sections would have fallen about .125 of an inch *above* the 128-inch altitude. The tide staffs marked

TABLE SHOWING ALTITUDE OF AIR LINE ABOVE DATUM LINE AT EVERY STATION OF SURVEY, WITH THE MEASURES COMPARED WITH THE CALCULATED CURVATURE.

Dates of Measurements on Tide Staffs.	Distance in Feet Beginning.	Distance in Miles.	Number of Adjustments.	Number of Tide Staff on Beach.	Inches Altitude of Air Line Above Fixed Datum Line.	Distance of Air Line Below Secondary Datum Line, inches.	Calculated Ratio of Convex Curvature, inches.	Difference Between the Ratios, inches.
March 18	0	0	0	1	128	0.	0.	0.
" 19	660	.1	55	2	127.85	.15	.125	.025
" 23	1,320	.2	110	3	127.74	.26	.5	.24
" 24	1,980	.3	165	4	126.625	1.375	1.125	.25
" 25	2,640	.4	220	5	126.125	1.875	2.	.125
" 27	3,300	.5	275	6	124.125	3.875	3.125	.75
" 30	3,960	.6	330	7	123.675	4.375	4.5	.125
" 31	4,620	.7	385	8	121.57	6.43	6.125	.305
April 1	5,280	.8	440	9	119.98	8.02	8.	.02
" 2	5,940	.9	495	10	117.875	10.125	10.125	.0
" 8	6,600	1.0	550	11	116.44	11.56	12.5	.94
" 9	7,260	1.1	605	12	113.69	14.31	15.125	.815
" 13	7,920	1.2	660	13	111.07	16.93	18.	1.07
" 14	8,580	1.3	715	14	107.19	20.81	21.125	.315
" 14	9,240	1.4	770	15	104.69	23.31	24.5	1.19
" 15	9,900	1.5	825	16	101.69	26.31	28.125	1.825
" 16	10,560	1.6	880	17	97.38	30.62	32.	1.38
" 24	11,220	1.7	935	18	93.44	34.56	36.125	1.565
" 26	11,880	1.8	990	19	85.32	42.68	40.5	2.18
" 27	12,540	1.9	1,045	20	79.75	48.25	45.125	3.125
May 8	13,200	2.0	21	74.	54.	50.	4.	
" 8	13,860	2.1	22	68.	60.	55.125	4.875	
" 8	14,520	2.2	23	63.	65.	60.5	4.5	
" 8	15,840	2.3	24	53.	75.	72.	3.	
" 8	21,780	2.4	25	0.	128.	136.125	8.125	
RETURN SURVEY.								
" 6	12,540	2.0	1,084	20	79.75	48.25	45.125	3.125
" 11	11,880	2.1	1,140	19	85.47	42.53	40.5	2.03
" 11	11,220	2.2	1,194	18	93.68	34.32	36.125	1.805
" 11	10,560	2.3	1,250	17	97.13	30.87	32.	1.13

brilliant points of interest throughout the survey; for each

measurement was a demonstration not only of the fact that the earth curved toward its chord, but also the *ratio* of its concavity.

For easy reference and definite record, we have condensed all of the facts of measurements of the Koreshan Geodetic Survey, into the preceding table of distances and altitudes, by means of which the results of our work may be easily compared with the calculated ratio, and how nearly, at each tide staff, the hair-line of the apparatus came to indicating the ratio which we have since calculated, and here present for comparison and study. It will be noticed that the difference between the measured and the calculated ratios increases toward the end of the survey; the apparent rapid approach of the line to the water's surface after $2\frac{1}{4}$ miles had been surveyed, is due, not to actual approach to the mean water level of even curvature, nor to inaccurate work nor measurements of the tide levels, but to the crowding of the waters around the mouth of the Pass, creating a slight irregularity in the water level in that vicinity. It will also be noticed that the line projected into the water at the distance of $4\frac{1}{8}$ miles, instead of 4 miles, which is due to refraction and incurvation of the visual lines from the $2\frac{1}{2}$ miles station to the water's surface beyond the Pass.

Comparative Results of Altitude Measurements on Concave and Convex Surfaces.

It may be asked, What would be the facts of measurement if such a survey as ours were made upon a *convex* surface? We append table of comparative results, for reference, study, or test by calculation. Having two parallel arcs, the mean tide level, and the secondary datum

line, connected by staffs of 128 inches altitude, as fixed bases of reference, it may be seen that on a *convex* earth, instead of the air line falling *below* the vertical point of every staff,

TABLE CONTRASTING AIR LINE AS SURVEYED, WITH CALCULATED RESULTS UPON CONVEX SURFACE.

Miles Distance From Beginning.	Altitude Surveyed Line, inches.	Distance Below 128-Inch Altitude on Concave Surface, inches.	Calculated Distance above 128-Inch Altitude on Convex Surface, inches.	Difference Between Convex and Concave Readings, inches.	Total Altitude of Tangent to Mean Tide, Convex Surface, inches.	Total Altitude in Feet.
0	128.	0.	0.	0.	128.	10.66
	127.85	.15	.125	.275	128.125	10.67
	127.74	.26	.5	.76	128.5	10.7
	126.625	1.375	1.125	2.49	129.125	10.76
	126.125	1.875	2.	3.875	130.	10.83
	124.125	3.875	3.125	6.99	131.125	10.94
	123.675	4.375	4.5	8.875	132.5	11.04
	121.57	6.43	6.125	12.555	134.125	11.17
1	119.98	8.02	8.	16.02	136.	11.33
	117.875	10.125	10.125	20.25	138.125	11.5
	116.44	11.56	12.5	24.06	140.5	11.7
	113.69	14.31	15.125	29.435	143.125	11.92
	111.07	16.93	18.	34.93	146.	12.16
	107.19	20.81	21.125	41.935	149.125	12.42
	104.69	23.31	24.5	47.81	152.5	12.7
	101.69	26.31	28.125	54.435	156.125	13.01
2	97.38	30.62	32.	62.62	160.	13.3
	93.44	34.56	36.125	70.685	164.125	13.67
	85.32	42.68	40.5	83.18	168.5	14.04
	79.75	48.25	45.125	93.375	173.125	14.42
	74.	54.	50.	104.	178.	14.8
	68.	60.	55.125	115.125	183.125	15.26
	63.	65.	60.5	125.	185.5	15.7
3	53.	75.	72.	147.	200.	16.6
	0.	128.	136.125	264.125	264.125	22.01

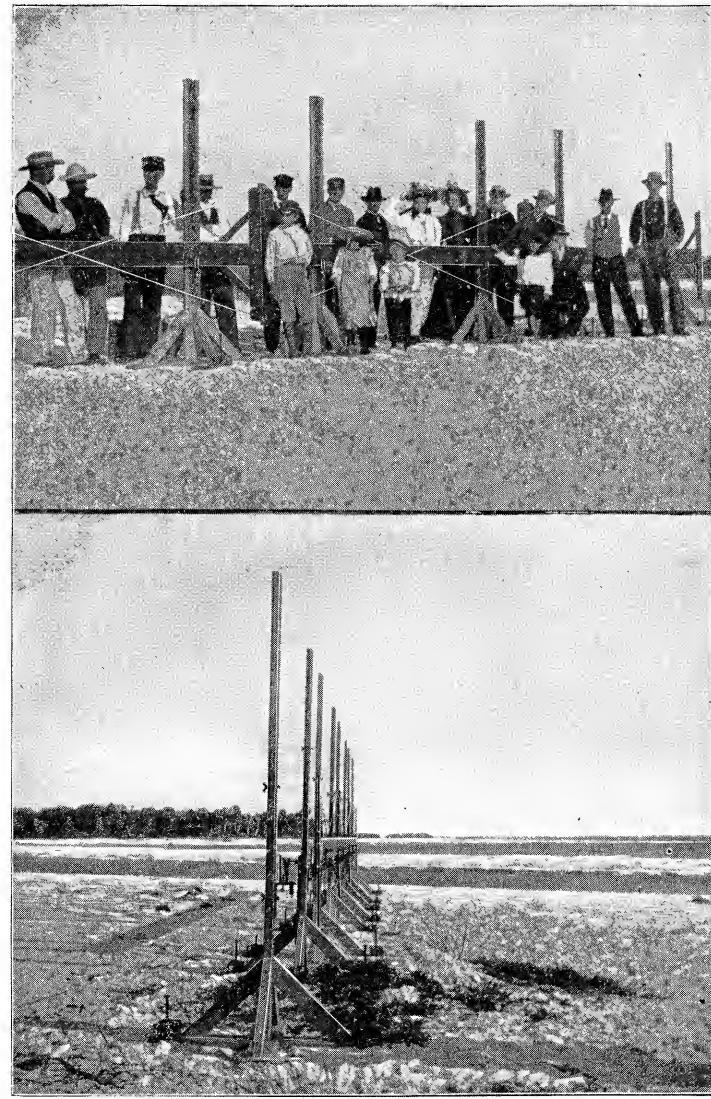
it would *rise above*, and increase in excess of altitude above the original 128 inches as to the square of the distance.

For instance; at the end of the first mile, instead of the

surveyed line falling 8.02 inches below the secondary datum line, it would rise about as far above, making a difference of about 16 inches in the altitude of the line on the concave, and the line on the convex earth; while at the end of $4\frac{1}{8}$ miles, instead of the line extending into the water, the line would be projected out into space, 136.125 inches above the original 128 inches, making a difference between the two theories of 264.125 inches, or about 22 feet, in $4\frac{1}{8}$ miles. We could not miss the mark 22 feet with any right-angled apparatus, nor could we make such a blunder as running a line into the water on a convex earth!

Conclusion of the Direct Demonstration.

We have followed the line of logical argument from the beginning of Part II, or the NEW GEODESY; we have stated clearly the principles of our premise, and the relations of the chord and arc, and have reviewed the methods employed in the old geodesy. We have presented a long line of experiments, disproving by ocular means, the theory of the earth's convexity. We have followed the line of direct demonstration from the very foundation principles of all geometrical forms and relations; we have embodied these principles in an apparatus, and have described all of the details of the Geodetic Survey from the beginning to the end, and have summed up the measurements and the results. Step by step we have *proven* our propositions; from the beginning we have made no assumptions, we have not built upon hypotheses. We have been logical and clear; honest, open, and frank. The evidences obtained from the line of experiments and surveys are all in. We have completed the chain of direct demonstration; only the conclusions now remain to be stated.



At Gordon's Pass.

Group of Witnesses and Position of Apparatus at Farthest Point South.

Etchings Nos. 5 and 6.

The simple route to conclusion is the relating of the surveyed Air Line to the datum line or mean tide level. From the facts of measurements obtained in the work which we have described, we may construct diagrams which will illustrate and demonstrate our conclusion. We began with reference to known and determined perpendicular and horizontal ; from the first adjustment of the Rectilineator, we projected an Air Line for the distance of about 4 miles ; the line throughout was straight, and maintained its parallel relations to the external tangent. In the accompanying diagram, A is the perpendicular ; BC, the line surveyed ; B, the beginning, and C, the point of projection into the water. The altitude of the line at the beginning



The Air Line, Datum Arc, and External Tangent.—Altitude of Surveyed Line at 25 Points.

was 128 inches ; it follows that the line was parallel with the external tangent, and consequently 128 inches above the external tangent, PQ, throughout the entire distance. Now, a surface intervenes between the Air Line and the external tangent, the distance to which is 128 inches at the beginning, and 0 at the end ; we have given the measurements for all the intermediate points—the distance from the rectiline down to the datum line at every tide staff. The fine lines in the cut extending downward from the line BC, indicate the measured distance from BC to the datum arc at every tide staff. The datum arc is the line which the measurements relate to the projected rectiline above ; and as the measurements were made from the surveyed line to

the water's surface, it follows as a conclusion forced by the intellectual comprehension of the principles employed and the results obtained, that the arc of the water's surface curvates *concavely* at about 8 inches to the mile, or 128 inches (10 feet and 8 inches) in about 4 miles.

We may take the measurements of the space on the tide staffs between the rectiline and the original 128-inch altitude, at the various stations of the 25 tide staffs, beginning at the *top* of Tide Staff No. 1, and ending at the *bottom* of Tide Staff No. 25. XY is the arc of the water's surface; A, the perpendicular at the beginning, from which the rectiline BC was projected. The fine lines are the tide staffs from the beginning to the end, which are



The Air Line Intersecting the 25 Tide Staffs, Falling Below the Vertical Points in Proportion to the Square of the Distance.

intersected by the rectiline BC, cutting each staff at a lower point than the preceding one, until at the last the rectiline BC touches the arc XY, demonstrating not only the fact that the water's surface is concave, but also the definite ratio of its curvature. The above diagram serves only to illustrate the relation of the chord, radii, and arc, but not the scale. A diagram drawn true to scale, sufficiently large to show the vertical altitudes, would be too long for printing. The following specifications for drawing the scale will serve to convey to the mind the proper proportions on the basis of the calculated ratio of the concave curvature, which very nearly agrees with the ratio which we obtained by processes of mechanical survey:

SCALE: 1 to 586.667; 9 ft. = 1 mile; 36 ft. = 4 miles.

The scale is projected on the basis of a circle of 42.5 miles circumference; 13.5 miles diam., with 6.75 miles radius.

.204 in.	represent 10 ft.	.0136 in.	represent 8 in.
.0204 in.	" 1 ft.	.2176 in.	" 10 $\frac{2}{3}$ ft.
.0017 in.	" 1 in.		

Length of sine of arc, representing 4-mile line of survey, 36 ft.

Curvature of arc in 36 feet, from external tangent, .2176 in.

In the opposite direction, if the drawing be extended to complete the chord (making diagram 72 feet long), curvature would be the same.

.2176 in. : 36 ft. :: 1 : 1980.

Diagram consists of two principal lines, each 36 feet in length, beginning parallel to each other, .2176 in., or more than one fifth of an inch apart; upper line straight, the other being the arc of the circle of 6.75 miles radius, curvating concavely in the direction of the sine of arc at the ratio given below, converging with the sine at the distance of 36 ft.

Curvature per mile on the scale;

First mile,	.0136 in.	Third mile,	.1224 in.
Second mile,	.0544 in.	Fourth mile,	.2176 in.

On scale of 1 to 586.667,

.0136 in.	represents 8 in.	.1224 in.	represents 72 in.
.0544 in.	" 32 in.	.2176 in.	" 10 $\frac{2}{3}$ ft.

The results obtained in the survey of the sine of arc, or half a chord, would obtain in the *opposite* direction also. At the commencement of the survey, when the first sections of the apparatus were leveled and in adjustment, special observations were made of the horizon in the *north* as well as in the *south*; the straight-edges sustained the same relation to the two horizon points; and the several processes for leveling the apparatus, which were employed at Station 1, in connection with the observations, constitute the premise of the conclusion that the ratio of curvature of the earth toward the *north* from our stationary caisson, is the same as toward the *south*. In this way we definitely relate nearly 8 $\frac{1}{2}$ miles of arc of concave curvature and its chord, and from the facts obtained, the conclusion is *inevitable* that

an area of the earth's surface of $4\frac{1}{8}$ miles radius contains a concavity whose depth at the center is about 128 inches.

The extension of the arc of curvature which we have measured and have demonstrated to be concave, forms a circumference of about 25,000 miles; which conclusion, taken in connection with all the astronomical, geographical, and geodetic facts obtained by centuries of observation and survey, demonstrates that the surface of the earth upon which we live is the *inner* surface of a great cell about 8,000 miles in diameter.

The New Geodesy in Its Success Exceeds in Importance the World's Fruitless Scientific Research.

Our knowledge of the figure of the earth is only obtained by indirect means.—Astronomer Ball.

The geodetic operations carried on during the last century and a half for the purpose of determining the figure and dimensions of the earth have, up to this time, led to no satisfactory results. They have been performed by the most eminent astronomers, with the most perfect instruments, and it would seem that they ought to have led to a final solution of the problem; such, however, is by no means the case. Every new measure of a meridian arc has but added, and adds, to the existing doubts and want of concordance, nay, to the positive contradiction which the various operations exhibit, as compared with one another.—Von Schubert.

The problem that has so long engaged the minds of scientists has been solved; the earth's form, the determination of which has baffled the skill and taxed the ingenuity of the scientific world, is at last demonstrated to be *cellular*, with its habitable surface concave! In the light of all it implies and involves, there is nothing in the entire realm of science that is of more stupendous import. When realized, there can be nothing more startling than the absolute evidences of the earth's concavity. To the mind of the rational investigator, the theory of the earth's con-

cave curvature is removed from the plane of mere probability to that of absolute certainty; the circuitous route of inquiry concerning the various phenomena of the universe is now obviated, and the question definitely settled in the minds of those who have considered and comprehended the meaning of the simple facts afforded through the application of the principles of accurate geodetic survey.

The importance of an undertaking is always measured by its ultimate results. On such a basis, we place the importance of our geodetic survey over against all the efforts of modern scientific men, with all their millions of dollars, with all their appliances and apparatus of the very finest workmanship, and with all their observatories. With all the facilities at their command, they have failed to bring to humanity that which they have been commissioned and paid to discover. The geodesist and geographers have almost girdled the globe with surveyors' chains, in the endeavor to discover the earth's true form. Certainly, at their bidding, vessels have plied the oceans of the world in every direction, and from pole to pole, in the hope of discovering some fact indicative of the correctness of their conclusions. In the more advanced nations, section after section has been selected as the field of geodetic observations,—for the survey of base lines, spherical triangles, and quadrilaterals; and yet they have failed to accomplish that for which they have ostensibly labored. Likewise, the ingenuity of the astronomers has been directed toward the heavens in the investigation of all the movements of the visible orbs above us, and they have failed to discover a single fact in support of the hypothesis of the earth's motion—they have failed to determine the true distance of a single fixed star, and their calculations of solar, lunar, and planet-

ary magnitudes and distances are wide of the mark. To prove the theory of the earth's diurnal rotation and annual revolution about the sun, many ingenious experiments have been conducted, and wonderfully accurate instruments and mechanical appliances have been employed, but without success.

When we consider the remarkable success of the geodetic work of the Koreshan System in proving the earth's concavity, in contrast with the failure of scientists, how utterly insignificant seem all their efforts! How fruitless the many expeditions commissioned by the various governments of the world, to make observations of the transits of Venus for the purpose of determining the true solar parallax! How valueless, in view of the failure to prove the conclusions desired, are the experiments with Foucault's pendulum, the rotating gyroscopes, spectral analysis, and star-gauging! In short, the stupendous efforts put forth in the cause of so called science are needless expenditures of energy. We are not discrediting the scientific work of the world; such efforts have their value, but the work thus far performed by scientists of the old school, is not of paramount importance. We are simply comparing success with failure, the results of energy directed along the line of Truth, with that contributed to the cause of the great mogul of fallacy. The great wonder of the hour, the startling fact now manifesting and forcing itself upon the rational mind is, that outside of the ranks of recognized scientists there should develop a line of scientific work that eclipses all the efforts of the vast army of astronomers and teachers in all the observatories and universities of the world!

Columbus in his adventures struck a chord that re-

sounded throughout the world; he led the westward march of empire and the progress of civilization. The operation of the mighty forces of human development, which before were confined to the old world, was made to pivot upon the discovery of new fields of expression. Within the lifetime of that one man a great change came; where in the earlier days of his career his plans fell upon deaf ears, there were soon awakened in all the kingdoms of Europe, mighty movements toward the new continent. He lifted the veil from the new world; that act was the turning-point in the progress of nations. Vastly more important than the discovery of the continent of America is the discovery of the true cosmic form, in which all continents lie, with the resultant demonstration—that which brings to the world a comprehensive view of the Light of Ages! The Koreshan System is founded upon a scientific and specific premise. The System pivots upon the fact of the earth's concavity; the demonstration of that fact is the pivot of its success.

The mighty forces of the impending scientific revolution, hitherto confined in their proper centers and spheres of elaboration, involved in the integral mind which has brought to us the marvelous System, and pulsating about the pivot of the demonstration of the scientific premise, will soon be manifest in the awakening of the world to the realization of the dawn of a New World—a New Era, in which humanity will be saved from the prevailing fallacies—ignorance and darkness! The testimony of the Air Line, the chord of arc, will *vibrate the world* in confirmation of the message of KORESH! That testimony is now proclaimed to the world. The tension of human thought and the voltage of mental energy involved in the work of promulgation of the Koreshan System, and the triumphant

herald of the facts of the demonstration of its premise, will be felt in future years—long ages after all fallacious systems have been buried in the ruins of the old world !

Echoes of the Geodetic Survey.

Conclusive Answers to Irrational Objections and Arguments Against the Results Obtained by the Rectilineator.

Obstinacy Manifested by the Chagrined Critics.

I learned, as my first great lesson in the inquiry into obscure fields of knowledge, never to accept the disbelief of great men or their accusations of imposture or imbecility, as of any weight when opposed to the repeated observation of facts by other men admittedly sane and honest. The whole history of science shows us that whenever educated and scientific men of any age have denied the facts of other investigators on *a priori* grounds of absurdity, the deniers have always been wrong.—Prof. A. Russell Wallace, the Eminent Naturalist.

THE Geodetic work at Naples, Fla., has been completed, and the facts thereby obtained have been published to the world. Many are rejoicing over the results; others are chagrined. In the stubborn resistance immediately manifested by a few who would have rejoiced had the evidences produced by the employment of the Rectilineator been favorable to the Copernican theory, we find history repeating itself. Because of this, we publish the above quotation from the pen of a recognized scientist, which reveals the character of the opposition to the facts of demonstration and observation in its true light. Fallacy is rooted and grounded in the very heart of humanity, and will not abandon its hold without a struggle. For the benefit of the reader, we here recall the fatuous opposition to the facts of the discovery, by the noted Harvey, of the circulation of

the blood in the human system. Although he produced the evidence,—made ocular demonstrations of the flow of the blood through the arteries and veins of the human body—the physicians and anatomists of the old schools refused to investigate. Today, there is not a man that can be found to deny the circulation of the life fluid through the arterial and venous systems.

When the telescope was invented and began to reveal the movements of satellites about the planets, the facts observed by Galileo and others were stubbornly denied by the astronomers of the Ptolemaic system; and for years Galileo succeeded in inducing but few to witness the phenomena through the telescope. One scientist, who had more zeal, prejudice, and jealousy than knowledge and wisdom, wrote a dissertation on the telescope, attempting to show how astigmatisms could be produced in the lenses, and the lenses made to revolve in such a way as to give the appearance of the satellites revolving about the planet Jupiter. That man lived and died without ever having made a single astronomical observation by means of the telescope. What did he know about the telescope? The sequel proved that he knew nothing; yet he denied that the objects that were seen were possible to be seen.

Geodetic and Geometrical Ratio of Earth's Concavity.

The earth's concavity is considered as an absurdity, and the long line of demonstrations of the same, the mere result of deception and fraud. What do our critics know about the facts we have observed? Upon what reasonable ground can the evidences we present, be disputed by those who have never undertaken the lines of experimentation we have projected? The opposition to our work today is

as unreasonable, absurd, and idiotic as that manifested against the work of Harvey and Galileo. We persistently proclaim the *facts* we have observed and obtained; they are as persistently denied by a few who have never ventured near the surface of water to test its contour. We have surveyed a line by means of a mechanical apparatus, the results of which are as easily (?) explained away by a few who have never seen the apparatus, and who know nothing about its capabilities or methods of use, as the moons of Jupiter were explained by those who had never observed their motions through the telescope. These so called explanations of the results of our survey, we purpose to overthrow.

We have surveyed a line upon the Gulf coast of Florida. The measurements were such as to demonstrate conclusively the *concave* arc of the earth's curvature upon which the survey was made, and not only the direction of its curvature, but also its ratio. In this survey we found a definite ratio of approach of the earth's surface to meet the rectiline extended from an altitude of $10\frac{2}{3}$ feet above the water level; the line was extended into the water's surface at a distance of about 4 miles from the beginning of the survey, as shown in the diagram on the following page; XY being the *concave arc* over 4 miles in length; AB, the air line; A, the beginning, $10\frac{2}{3}$ feet above the water, and B, the point of extension into the water; N is north; S, south; 1, 2, 3, 4, the mile stations; *ab* represents the external tangent parallel to the air line, showing the ratio of curvation of the earth's surface for each mile of the survey, while *cd* represents a line referred to later in the article. The ratio of the concave curvature was in proportion to the square of the distance; at the end of the

first mile, the distance between the air line and the water's surface was 8 inches *less* than at the beginning, because the earth in this distance had curvated upward 8 inches; the second mile, about 2 feet and 8 inches; third mile, 6 feet, while at the end of the fourth mile the line extended into the Gulf. In the diagram, the lines of perpendiculars extending from the air line to the arc at 0, 1, 2, 3, 4, decrease in length in precisely the same proportion that the earth curvates concavely. Not only was the proper ratio found to exist at the end of even miles; but also at the end of *every eighth of a mile* from the beginning of the survey.

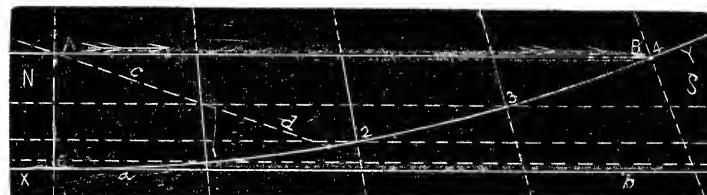


Diagram of Air Line on Concave Surface; Ratio of Curvature.

Let each reader capable of making a mathematical calculation of the ratio of curvature of a concave sphere 25,000 miles in circumference, test this ratio and the results obtained by the survey, and it will be found that such ratio cannot be obtained by the extension of a right line upon any other than a concave surface; the geometrical principles involved will not admit of it.

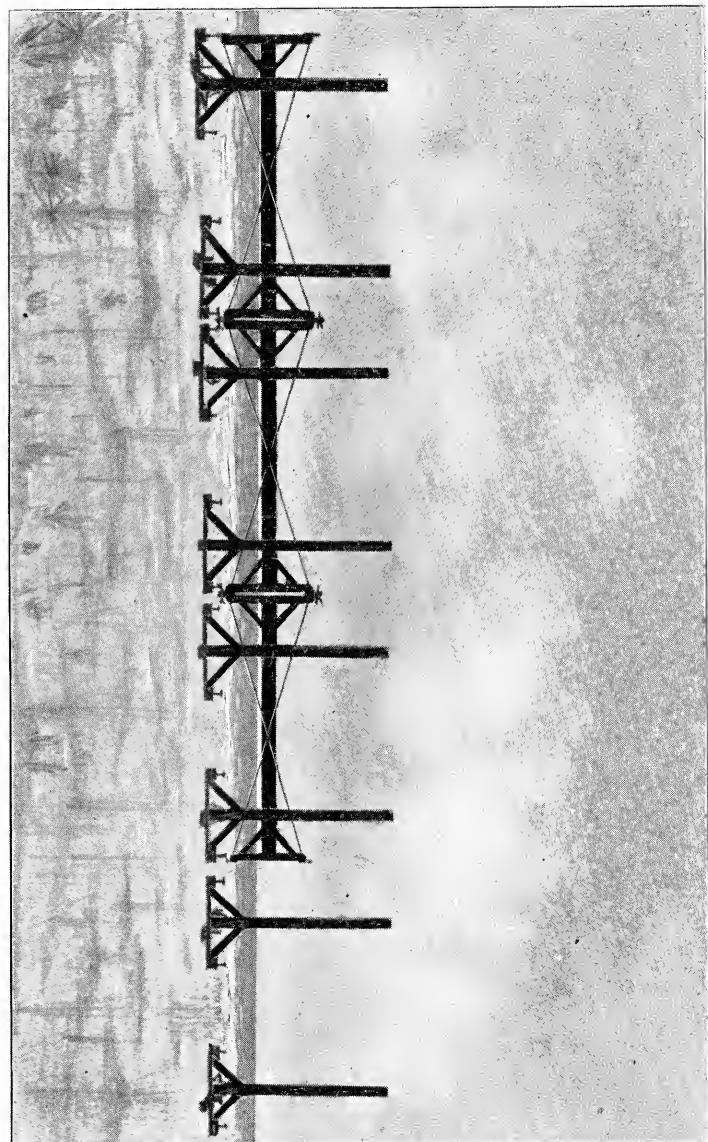
Two Classes of Objections Urged.

We confront two classes of objections to the character of the geodetic work upon the coast of the Gulf of Mexico. From several sources, it is claimed that the Rectilineator is not sufficiently accurate to extend a straight line; while

from others comes the accusation that we purposely inclined the first section at the starting point, so as to extend the line into the water at a distance of 4 miles; from others, that the first section of the apparatus was not accurately leveled, but inclined toward the earth by mistake. We suppose that these two classes of objections seem satisfactory to the minds expressing them.

We knew that the objection would be urged that the apparatus was not accurate, and therefore took extra precautions, not only that such objections might be overthrown, but also to insure the accuracy required for such work; we did not devote four weeks to making the apparatus accurate, for nothing. The method employed to insure further accuracy, was by making the apparatus neutralize its own inaccuracies by reversal or turning-over of each section at every alternate adjustment. This process would correct any error arising from any inaccuracy of the brass-facings—for whatever error in the line would result from a single cross-arm being more or less than .001 of an inch out of right angle, would be corrected when that section should be reversed, as every mechanic well knows. A source of inaccuracy is also attributed to the contraction and expansion of the material of which the apparatus is constructed. Those who make this objection have never seen the apparatus, and consequently cannot appreciate the fact that the plan of its construction obviates the effect of whatever contraction or expansion occurred. Besides, there are no sources of error or inaccuracy—those of adjustment, settling, vibration from the wind, or change of temperature, that could conspire to produce a deviation of the air line always in the same direction. Check up all the errors that occur, as is done by all surveyors, and the value of the

Away Down on the Standards.
At Gordon's Pass, $2\frac{1}{2}$ miles south of Naples; 4 feet nearer the water than at beginning; the Straight-edges and the Horizon.
Etching No. 7.



"elements of chance" is found to reside in the fact that the deviations are finally neutralized. It is supposed that settling played an important part in the descent of the line surveyed; if so, why should the line descend .15 of an inch for the first eighth of a mile, and 6 inches for the eighth between the 19th and 20th tide staffs? If settling produced the descent, this would be manifest by returning over the same line. We returned over the same line for a distance of $\frac{3}{8}$ of a mile, to ascertain if there would be any deviation. The fact that the horizontal axis of the apparatus projected the line on the return survey, to the same points on the record stakes indicating the air line in the forward survey, is proof of the fact that the factors of settling, if any existed, were absolutely neutralized, for they did not swerve the apparatus from a true and direct rectiline course. Let those who make such objections explain how the exact and definite ratio was obtained, if we did not extend a rectiline from the beginning of the survey.

The Objections Contradict Each Other.

We now come to the examination of the charge that we purposely inclined the first section so as to permit of extension of the line into the water in 4 miles. Our burden at the present time is not that we failed to produce the evidences that the earth is concave, but to get such minds to see the utter absurdity of such objections. The fact that these objections contradict each other, is conclusive proof that both classes of objections are made without a foundation of conclusion, and are simply subterfuges with which to evade the evidences afforded through the accurate survey. Suppose that we did purposely incline the first section out of level, what would be the result? The charge

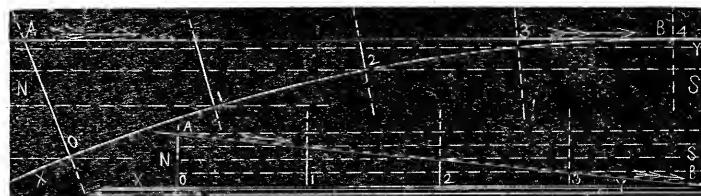
involves the admission of three things,—very necessary factors in the work of extending a rectiline: First, that our mathematics was exact—necessarily so, to calculate the angle of inclination; second, that we were capable of making some absolute measurements of angles in the adjustment of the first section of the apparatus, and third, that the apparatus, in order to extend a line from the inclined position of the first section into the water at a distance agreed (?) upon before the work began, would have to be perfect and capable of extending a straight line, for with what else than a perfect apparatus and accurate measurements of angles, could we strike the water at the distance desired, from a given inclination of the first section from an absolute level? In order for the charge to be true, we would have to extend an *absolutely straight line*, involving just the kind of adjustments and minute measurements that the other class of minds says is impossible. We know that the first section was level, having applied two of the finest levels obtainable; we made no mistake—the accuracy of our line depended upon getting the first section in the absolutely correct position.

Reply to Charge of Inclining First Section.

We will examine the charge in another light—in the light of geometrical principles, and will endeavor to illustrate our exposition of this charge and objection in the two diagrams in the following cut: Let XY represent the convex arc; AB the air line, beginning at an altitude $10\frac{2}{3}$ feet* above the water, and inclined out of level so as to strike

*Really, to conform to the fact that the air line extended into the water in 4 miles at an angle, with the horizon $1\frac{1}{2}$ miles beyond the end of the chord, the altitude of the starting point, on the convex earth as per charge, would have to be 18 FEET and 8 inches, instead of 10 feet! For the sake of simple illustration, we have represented the line as terminating at the horizon, and consequently parallel to the water.

the water in four miles; N is north; S, south; 1, 2, 3, 4, indicate mile stations along the line of survey. Now contrast the ratio of approach of the line to the water's surface that we have exhibited in the cut illustrating the line extended over the concave arc. In the first diagram, the line began parallel with the water's surface, and ended obliquely to it. In this, the line begins at a definite angle from the horizontal, and ends coincidental with or parallel to the horizontal at B. The ratio of approach of the line to the water's surface would be just the reverse to that really obtained. As for instance, beginning $10\frac{2}{3}$ feet



Results of Projection of Rectiline on the Surface of Supposed Convex and Flat Earth.

above the water, at the end of the first mile, the line, according to the basis of the charge, would be 4 feet nearer the water's surface than at the beginning. The ratio of approach of the line to the water's surface would be more rapid at the beginning of the line than at the end, and the ratio of divergence of the line from the end of the line to the beginning, would be in proportion to the square of the distance from the end of the line; whereas in fact, in the survey of the line at Naples, Fla., the ratio of convergence of the air line and the water's surface was less at the beginning of the line and greater at the end. If the air line had really descended at the ratio of 4 feet for the first

mile, and so on, in proportion, the line would have extended into the surface at a distance of $1\frac{3}{4}$ miles from the beginning of the line, and the angle of inclination from the horizontal would have been enormous.

If the earth were a plane, the result of inclining the first section of the Rectilineator so as to extend the line into the water in 4 miles, would be an even ratio of descent of the line, as represented in the diagram below the convex arc in the preceding cut, in accordance with the principle of convergence of two straight lines. XY would represent the water line; AB the air line, as per charge; N is north; S, south; 1, 2, 3, 4, the mile stations. The approach of the line to the water for the first mile would have been $2\frac{1}{2}$ feet; for the second mile, $2\frac{1}{2}$ feet, and the same for the third mile, and the same for the fourth. The air line would sustain the same obliquity to the horizontal throughout the line of survey. On the convex arc, the deviation of the horizontal axis of the apparatus would be greatest at the beginning of the line, and horizontal at the end. How was it? The line showed no perceptible deviation from the horizontal until near the end of the first eighth of a mile, and increased continually as the line progressed, until at the end of $2\frac{3}{8}$ miles the obliquity of the air line to the horizontal was sufficient to extend the visual line from that point to the surface of the Gulf, below the horizon.

Charge of Falsification of the Facts of Measurement.

We confront the objection that the apparatus was specially constructed to run a curved line on a convex surface. This is a mere ignorant subterfuge; no one ever having made such an objection can show how this could be possible. The construction of such an apparatus would in-

volve the necessity of attaining a thousand fold greater degree of accuracy and precision of adjustment and skill than the other class of objectors claim to be possible!

We confront also the charge that we falsified the facts; that upon discovery of the convexity of the water, we published the opposite results. If such were the case, it would be far more easy to gain fame by telling the truth concerning the results of the only method ever employed capable of settling the question absolutely, in favor of the Copernican theory, than to lie in favor of the Koreshan Cosmogony; for by the methods employed we could have determined not only that the Koreshan System was not true, but also that, by reason of it not being true, it could never become the prevailing system. To take such a course, to which we are subject to charge, would be to commit scientific suicide. We testify as we do because we *know* what the results mean as absolutely as the fact that two and two are four. If it be charged that we lied about the results of our survey, it is an admission on the part of the objectors that if the earth be convex, the Koreshan Geodetic Staff *alone* has obtained the facts concerning the earth's form, and a bestowment of honor upon them as being the *first* to demonstrate the Copernican System!

Other Experiments Corroborate the Survey.

The above replies to objections will be conclusive to those who will consider and comprehend the facts. It would be impossible to satisfy a man who doubted the accuracy of the multiplication table, until he came to a knowledge of some simple principles of mathematics. We do not expect to reach those who *will not* nor *cannot* reason; their minds will have to be changed by the turn in the tide of

popular favor from the old to the New System. But it seems strange to us that right in the face of the facts obtained—in view of the fact that no such direct means have ever been applied by the old-school scientists, in view of the fact that they admit that all the so called evidences of the earth's convexity are only cumulative and circumstantial, and in view of the fact that those who criticise our work were not brave enough to face the issue and participate in the experiments performed by the Geodetic Staff—that the direct and absolute evidences we have produced should be rejected by any mind capable of realizing the geometrical principles involved in simple right angles.

Corroborative of the demonstration of the earth's concavity by means of accurate survey, we have the long line of evidences obtained by other means,—tests of the surface of water on canals, lakes, and seas—tests and experiments which can be repeated upon any body of water, to the satisfaction of the most skeptical. The facts we have observed and the line we have surveyed, demonstrating the earth's true form, are susceptible of test. We challenge contradiction; but our challenge will have to be answered upon the field of contest,—to which we dare the scientific critics,—in the many lines of experimentation through which we have obtained the facts we announce to the world.

Concerning the character of the geodetic work conducted by our Staff, we reproduce the following extracts from a series of editorials from the pen of the editor of *The Leaflet*, of Ironton, Ohio, who followed the reports of the work, and reviewed them:

Convex or Concave, Which?

** He who has read carefully thus far, need not be at a loss to apprehend the nature of the question involved; and may form some

idea of his own as to the practicability of such demonstration. ** How shall we dispose of the facts of this seeming innovation on the convex theory of the earth's rotundity? They are now before you. If these men have laid themselves out to practice a deception on the gullible of mankind, and have doctored their instruments or tinkered their manipulations so as to obtain the results they expected, then we are sold in proportion to our commitment to what they say. What anybody could possibly expect to accomplish by such course, we cannot imagine. The belief does not comport with the intelligence of the persons capable of the work reported to have been done.

The language quoted does not belong to those who are ignorant of the laws of mind; nor does the subject matter treated indicate that it is by those unfamiliar with geometrical requirements. The carefulness and painstaking patience manifested are not characteristic of those who are incapable, or who care only for short-lived notoriety. The seeming desire for accuracy to the highest attainable degree in order to project a straight line, and the frank, open, and unreserved detail of procedure, the results of which anybody of equal skill could readily overthrow by experiment, if untrue, do not witness to our mind a fake. **

The pressure seems to be on the mathematicians and philosophers of the whole convexite fraternity—including all adherents of the renowned Copernican system—to explain the behavior of the spirit level, the plumb-line, and the water surface of the earth in their relation to a straight line projected horizontally!

But it is abhorrent to our sense of the eternal fitness of things to be committed to a fallacy, on any subject, when the truth may be known; and veritable measurement ought to go further in establishing a geometrical fact than, in its absence, mountains of evidence based on assumption.—Extracts from a series of articles by the Editor of *The Leaflet*, Ironton, O.

In the Daily Press.

Reprints and Etchings of Reports and Editorials in the Great Dailies of America.

Reports of the Florida Survey Went Around the World!

THE importance, magnitude, and influence of the work of the Koreshan Geodetic Expedition may be appreciated upon presentation of the evidences afforded through

the daily press, which, previous to our display of scientific plans and facts, was extremely unfavorable to the Koreshan System. We are often asked, Why have not the results of your work been made public? Why have not the newspapers contained something regarding it? These questions are asked by those who are not in touch with the most prominent factors and direct avenues instrumental in our propaganda. The results of the greatest, most important, and most remarkable geodetic experiments of modern times have made a distinct impression on the popular and the so called scientific mind. The startling information that the concavity of the earth's surface has been demonstrated, flashed from city to city, and from continent to continent, reverberating around the world the echoes of a daring and successful achievement, vibrating in the mental channels which became responsive to the evidences of the truth. From the columns of the daily press, the news went to the weeklies, carrying the news to town and hamlet in various parts of the world; millions of people have been made aware of the facts; we have had responses from all parts of the English-speaking world; also from France, Germany, India, Australia, New Zealand, Mexico, the West Indies, and Hawaii.

A number of the dailies containing reports of our work have come into our possession. We do not ask the reader to take our word for this, for we have evidences that will perhaps appeal more strongly to the skeptical mind. We have arranged about a score of available reports and editorials, showing the large displayed headlines; and by the etching process we reproduce photograph of the same. This arrangement includes favorable comments on the Koreshan System and the Expedition by the Hon. Henry

Watterson, the famous editor of the Louisville *Courier-Journal*. The display constitutes Plate 3, inserted at the close of this work. Preceding it is Plate 2, containing exact reproduction of one half page from the Chicago *Times-Herald*, which we also reprint in larger type as a part of this chapter; followed by report of interview by a *Courier-Journal* reporter, concerning phenomena supposed to support the popular system of astronomy.

We reproduce the photograph of the group of reports and editorials for the purpose also of confronting and refuting once and for all time, the objection we have so often heard since the completion of the Florida survey—that our work is to be looked upon with suspicion because we located our Operating Station so far from any scientific center. It is usually the custom of geodesists to operate wherever practicable; and have the objectors to our work subjected the work of other geodesists to the same criticism? Our survey began March 18, 1897; upon reference to the double page Plate 3, reports concerning our work in prospect will be found in dailies dated in 1896. The plans of the survey were widely published previous to the Expedition, and the results of experiments in the vicinity of the great Western metropolis, were published by every daily and weekly in the city of Chicago. This does not appear to be an attempt to evade the scrutiny of the public! Rather, we challenged the scientific world to become parties in the Southern experiments and surveys. We now publish the details of our work and the result, which are subject to test. The scientific world now not only has the advantage of our plans in minute detail, but also the reports of the facts and measurements obtained, which can be refuted or substantiated upon repetition of the same, by the same processes.

PROOF THAT WE LIVE INSIDE THE GLOBE.

Koreshans' Startling Claim That Their Theory is Demonstrated by Experiments and Surveys.—Scientific Revolution to Follow.

[From the Chicago Times-Herald, Editorial pages, July 25, 1897.]

ADVOCATES of the theory that we are living on the inside of a hollow shell 8,000 miles in diameter, instead of on the outside of a convex globe, now claim to be able to satisfy all who have asked for proof of the correctness of the theory. This strange Astronomical system, known as the Koreshan Astronomy, or the Cellular Cosmogony, was originated and founded by Dr. Cyrus R. Teed, of Chicago, and during the past twenty-five years he has succeeded in making a large number of converts to the belief that all the popular theories concerning the character of the universe are fallacious, resulting from the failure to properly interpret observations of the most common phenomena of the heavens and the scope of our horizon. In the promulgation of the Koreshan System, the discussion of the shape of the earth is revived; it is the most radical departure from the usual theories known to the world today—it is a complete antithesis. Consequently, the methods pursued in the new cosmogony and the conclusions reached therefrom are decidedly revolutionary.

With the entire system reduced to a pivotal and specific test, and with the plans for making that test, a company of experimenters was sent on an expedition last December to Naples, Fla., where there is a straight coast for a number of miles, to practically apply the principles of the newly discovered means of testing the earth's contour. The work of the Experimenting Staff of the Koreshan theory is of interest to all, from the simple fact that never before in all the history of the world has such a geodetic work been executed. Whatever might be thought of the results of the series of surveys

made on the Florida coast, the one fact remains, that at least the plan is unique and original, seemingly embodying a number of simple geometrical principles which have been for some reason entirely overlooked in the usual lines of scientific research and geodetic survey. The experiments and surveys on the gulf coast were under the direction of Professor U. G. Morrow, of Chicago, who has from time to time supplied the *Times-Herald* with a report of the facts observed and results obtained, and now gives a final summary of the results of his investigations, which if accepted will revolutionize science.

Propositions of the Koreshans.

The main question involved, constituting the basis of operations in the new geodesy, is: Will an absolutely straight line surveyed in two directions from the vertical point of a perpendicular, and at right angles to that perpendicular, extend into space, the earth curvating away from that line, or will the line converge to the water's surface at two points, like the chord of a concave arc? It is claimed that this is the most direct means possible for determining whether the earth is rounded or convexed at its surface, or concaved as the inside of a hollow sphere; and if the experimenters have correctly applied the principles involved they have succeeded in making the first direct test of the character of the surface upon which we live. On account of atmospheric refraction, the rays of light and vision are bent out of the true rectilinear direction, and consequently cannot be employed as a practical test. The apparatus used, called the Rectilineator, is a mechanical contrivance for the purpose of forcing a straight line. The whole plan of the survey is clearly illustrated in the *accompanying diagram, which explains itself. The survey began with the

*See etched reproduction of this Editorial on Plate 2.

apparatus at an altitude of ten feet above the water's surface, making the basis of the figures eight miles instead of six, as first proposed.

If the earth curvates convexly at the ratio of eight inches to the mile, in four miles from the middle of the straight chord, or from the given perpendicular, the surveyed line would be twenty feet from the convex arc—the line would be that distance above the water at the end of the survey. On the other hand, if the earth curvates concavely, as the Koreshans claim, the line would come in contact with the water. Their object was to demonstrate that the line would "run into the water." They declare that the line surveyed on the gulf coast terminated, in accordance with their expectations, in the water at the distance of four miles from the given perpendicular.

How the Surveys Were Made.

Along the line surveyed were fixed stakes every eighth of a mile, upon which the altitude of the "air line" was registered as the survey progressed, in order that measurements might be made, and afterward referred to, of the distance of the line above the water's surface. In this way it was proposed to determine whether or not the line approached the surface at the proper ratio; and the claim is made that upon no other kind of a surface than the concave could such relations and figures be observed and obtained, the line approaching the surface in about the ratio of the calculated concave curvature. At the end of the first mile, the "line" was eight inches nearer the surface than at the beginning; second mile, about thirty-two inches; third mile, six feet, while at the end of four miles the line came in contact with the water. Also at every eighth of a mile the ratio was along the same line of progression; the results for even miles showing the aggregate result for

the measured altitude of the line for the stations intervening. From these figures it may be seen that the ratio of concavity determined by these measurements, very closely approaches the estimated curvature of eight inches to the mile. The ratio of descent of the line, the increase in the angle of deviation from the horizontal at stations of test with the levels, the length of the line surveyed from the beginning to point of extension into the water, as well as the direction of the plumb-line at various points, in consideration of the principles involved in the apparatus employed, all declare, it is claimed, the fact of the earth's concavity.

Scientists Challenged to Open Contest.

It can easily be imagined what an impetus such scientific tests would give to a system if they were true. If it were admitted that the results of this survey so definitely define the direction of the earth's curvature as to entitle them to credence by the scientific world, the Koreshans would have a weight of evidence that would render their position impregnable. The future will reveal the validity or the fallacy of their claims, and judging from the line of work planned by the scientists of the new school, they are not anticipating leaving the field to the criticism of the scientific world. Upon the strength of the results of the work of the expedition, the Founder of the System issues a general challenge to meet the advocates of the prevailing system, not merely in discussion, but in open contest upon the field of operations and experimentation. Corroborative of the results of the unique surveys, they claim to have a long line of facts of observation upon the surface of water itself, and the force of visible and tangible facts must be admitted to possess more weight with the people in general, than platform argument.

Concerning their attitude toward the leaders of mod-

ern scientific thought, Professor Morrow says: "If the scientific men of the world today are as willing to test the truth of our propositions and results of our geodetic work as we are to meet them in demonstration of the premise of the Koreshan System, no difficulty will be experienced in speedily settling the question. We hereby extend to them the opportunity of demonstrating the earth's convexity, and to destroy our premise or to establish the basis of the Koreshan Cosmogony, and thus overthrow all conclusions of modern science. In this we are not clamoring for dispute, but inviting an impartial test of the facts.

Easily Susceptible to Decision.

"There is not another issue before the world today, in which the principles can be so specifically stated and pivoted upon one point of test, nor so susceptible to absolute decision, as this one concerning the concavity of the earth; because the water's surface cannot be changed, and no method of solving the question is so obviously certain as the one formulated in the Koreshan System, the results of which are now proclaimed to the world. We have employed a unique apparatus in the survey of an air line, terminating in the water's surface as we proposed and anticipated before undertaking the survey. We employed a process of extension of a right line, concerning which there can be no question. We eliminated the elements of refraction of light and incurvation of visual lines, as well as the effect of perspective foreshortening, by mechanically forcing a straight line, and thus settled the matter beyond dispute. The work was laborious, requiring much time and patience. As yet, the scientists have not been forcibly made aware of the weight of the evidence obtained. We were confident in the beginning of our work, from consideration of the principles involved and the results which would inevitably follow, that we were pro-

jecting the greatest and most important geodetic survey of the nineteenth century.

"The importance of an undertaking is always measured by its ultimate results. On such a basis, we place the importance of our geodetic survey over against all the efforts of scientific men to determine the earth's shape, with all their appliances and apparatus of the very finest workmanship. We are not discrediting the geodetic work of the world; such efforts have their value, but the sequel proves that they are not of paramount importance. We are simply comparing success with failure—we have succeeded in accomplishing that for which they have labored for centuries, by the application of direct means of determining the earth's true shape. The great wonder of the hour, the startling fact now manifesting and forcing itself upon many rational minds is, that outside of the ranks of recognized scientists there should develop a line of scientific work that eclipses all the efforts of the vast army of scientific experimenters the world over.

"Nothing can now impede the progress of the Koreshan System; it is invincible. The world cannot long withstand the forces of the absolute truth, having for its foundation the indisputable facts of the greatest discovery of modern times. The facts we have observed and the lines we have surveyed demonstrating the earth's true form, are susceptible of test. We challenge contradiction; but our challenge will have to be answered upon the field of contest, in the many lines of experimentation through which we have observed the facts we announce to the world."

A Great Revolution Would Result.

The Koreshan scientists have taken the question out of the realm of discussion concerning various astronomical and cosmographical phenomena, and placed it at least in an

effort at demonstration. They claim that if the earth is really concave, it places the usual explanation of the character of the orbs above us and the movements of the sun, moon, and stars entirely on the side of absurdity, and the habitation of the planets impossible, because in such case all phenomena would have to be interpreted in accordance with the ground or foundation from which astronomical calculations are made—the arc of the earth's curvature. It can readily be seen that if that arc should be concave instead of convex, the immense distances attributed to the planets and other heavenly bodies would have to be set aside, and the stars brought to within a comparatively short distance above the concave arc.

It may be asked, what is the difference if the world is concave—in what way does it interest the general public? In the event of success on the part of Koreshanity, many popular theories would be revolutionized. No other system ever put forth in the world has effected such decidedly radical changes in the channels of human thought and life as would result from general acceptance of the premise of the hollow globe theory and its resultant conclusions. It would turn the scientific mind into newer channels of investigation, reveal newer laws, and clear away numerous mysteries concerning cosmical form and function. Every domain of thought and investigation would be invaded by the new process—in short, a startling, appalling and world-wide revolution would necessarily follow if it were proved beyond doubt to the general mind that the universe is a great cell or shell containing forms of life from the lowest domain of existence to the highest realm of being, as well as all the stars, planets, sun, and moon and atmospheres. Nothing could be more startling to the mind today than a vivid conception that the laws of universal existence and perpetuity have been discovered,

and all mysteries of the universe revealed through the knowledge of the earth's form and the relation of all its parts.

Koreshan Science and Theology.

How would it affect the popular theology—what has astronomy to do with a concept of the Creator? All through the ages past, astronomy and theology have gone hand in hand. All systems of theology have undertaken to incorporate an idea of creation, and consequently the nature and extent of that which has been created. Whenever changes have been made in general astronomical systems, they have resulted in changing the popular beliefs concerning theology and the processes by which the world was created and its existence maintained. The Koreshans say that if we admit for a moment that the modern scientific theories are untrue, the conclusion is inevitable that to whatever extent the teachers of theology have been influenced by a false scientific theory, to that extent they have been led astray concerning the Creator; in such case they would understand neither the Creator nor his works. The influence of the prevailing system of science has been universal. Perhaps no one has attempted to form a mental picture of the remote habitation of Deity, which the usual astronomical theory imposes, without attempting to form some idea as to distance—the mind has endeavored to reach out into infinite space to touch the heart of the Creator; it has wandered into a great circumference of space. Koreshans maintain that God is the center and heart of creation instead of being its circumference.

Thus it would seem that the popular idea of God has been largely influenced by the prevailing theories concerning the immensity of the universe and the infinity of space. If the concept of the universe be so radically modified and revolutionized as to maintain the limitation of the uni-

verse to the dimension of 8,000 miles diameter, it is obvious that a corresponding change of concept of the Almighty must necessarily follow. Because of this, Koreshans say that their system of science and their theology are inseparably connected and related—that in the discovery of the fact of the cellular form of the universe there has come to the world a definite knowledge of the laws of creation, and consequently the laws of perpetuity of not only the universe as the effect of the cause, but also the means of existence of that cause. It is claimed that the physical universe is the natural and outermost expression of the divine mind, and that if the natural universe and its laws are understood, they unmistakably indicate the character of the mind which expresses it.

Koreshans attempt to explain the great mystery of Deity scientifically. Hence the claim that the scientific theory of Koreshanity is the foundation or basis of its religion, which is claimed to be the revival of the primitive Christian system as it was taught prior to the declension and the apostasy of the church. Koreshans claim to defend the Bible—that the Bible teaches that the world is a hollow sphere, the outermost metallic strata being the “firmament” of the Old Testament—and that the Bible is scientifically correct in all its expressions. They hold that in the demonstration of the earth’s concavity, the inspiration of the Scriptures is scientifically proved and demonstrated. They teach that the two great forms of expression of the mind of the Almighty—nature and the Bible—are to be read in harmony, because originating in the same divine mind. The argument is that nature is the result of cause, and is true—a true and tangible index to all knowledge of all life in all domains of the universe.

Scientific men are yet on the voyage of discovery and research, from which it follows that they have not yet

definitely located the secret of the great cause of existence, nor yet satisfactorily explained the real purpose of the world. The Founder of the Koreshan theory claims to have discovered that for which the thinking world is looking. If the leaders of the prevailing theories could be induced to critically examine the claims to such a discovery, or to come in contact with its advocates in open field of contest, so that a definite and satisfactory test could be made of the facts as embraced in the possible determination as to which way the earth curves, it would undoubtedly reveal that either the scientists of today are greatly mistaken, or that the Koreshans are promulgating the rankest and most absurd fallacy of modern times.

What Benefits Would Follow?

What is claimed to be the benefits to be derived to humanity through acceptance of such a system? It is one of the doctrines of Dr. Teed, its Founder, that there is not a law in the universe that man cannot apply to himself when understood; that man is a microcosm, or small world, involving the functions of the world at large; that to the extent that we mistake or misapprehend what are the laws of the universe, we fail to apply them, but that when men can comprehend what are the laws and principles of universal construction and perpetuity, he can adjust himself to universal being and become immortal. Man is held to be mortal, and will continue to be mortal until he has so applied and fulfilled immutable law as to overcome death and perfect himself mentally, spiritually, and physically. The very kernel of the system seems to be the claim to the discovery of the long sought for “philosopher’s stone,” the science of transmutation, which is looked upon as the key to all knowledge.

In accordance with this premise, a great system of organic unity of human and divine co-operation is hoped

for by the adherents to the Koreshan views. The laws of universal existence are sought to be applied to human affairs in the definition of the true science of government and political economy—it is claimed to be the beginning of the supreme Theocracy expected by all Christians to be made manifest in what is termed the "second advent," and hence the man originating the system of Koreshanity has some personal claims as to knowledge of divine law, and consequently a mission to perform in the world, looking to the establishment of a system of salvation of humanity from the present conditions of evil and mortality, through the institution of a new order of life and organic system correspondingly fashioned after the general universal order of the great cellular form which is held to incorporate all there is. Koreshans say many people have misunderstood the claims of Dr. Teed. His system is intricate, necessitating study and investigation to comprehend his mission; it is insisted by his followers that his claims are the rational claims of the true scientist. Those who have been engaged in the work of scientific experimentation, hold that in the practical proofs of the correctness of the Koreshan Cosmogony, all the scientific, religious, ethical, and economical principles of the entire system are conclusively demonstrated to be true.

KORESHANITY.

Prof. Morrow Tells of Dr. Teed's Theories.—Experiments in Florida.—Believes He has Proved the Earth is Hollow.—People and Planets on Inside.—Relations of the Sun, Moon and Stars to the World.—Explanation of Gravity.

[COURIER JOURNAL Reporter's Interview with Prof. Morrow, at Louisville, Ky., July 23, 1897.]

PROF. U. G. MORROW, of the Scientific and Geodetic Staff of the Koreshan Unity, is now in Louisville on his way to Chicago, where DR. CYRUS R. TEED, the originator

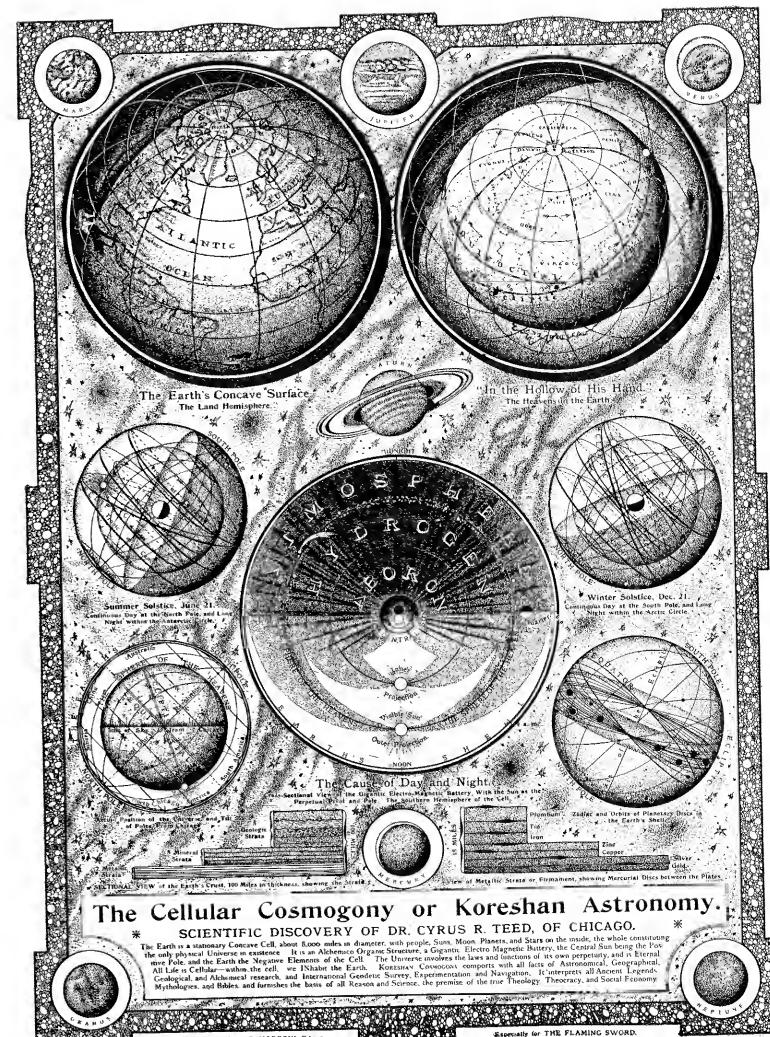


Chart of the Koreshan Cosmogony.
Showing the Principal Astronomical Features, in Explanation of the Phenomena of the Heavens.
Etching No. 8.

of Koreshanity and Founder of the Unity, lives, and where the seat of the Order is located. He has received many visitors anxious to make inquiry concerning the strange theories he advocates. Prof. Morrow has just concluded a series of experiments at Naples, Fla., which he thinks was highly successful, and which in his opinion conclusively proves the earth's surface to be concave and not convex, as is generally believed, and that we live on the inside of a great hollow sphere, not the outside. A description of the experiments was given some time ago in the *Courier-Journal*, with diagrams showing the methods employed. It was a novel undertaking, and, whether one admits the theory of Koreshanity or not, its results are certainly not without interest, and will attract attention among scientists the world over.

Prof. Morrow is enthusiastic over the outcome of his experiments. To a *Courier-Journal* reporter last night he said: "The character of our experiments in Florida was unique. The long series of observations of the Gulf horizon and of the water's contour, led us to apply some crucial tests; these tests were original, and had never been applied by those who hold to the popular view. The instruments we used were telescopes and transits, levels, plumbs, and a new apparatus, invented by myself, called the Rectilineator. We are now successful. Our work has been given an impetus that it has never had before. The strength of evidence and of argument we claim, ought to give us a remarkable hold upon the minds of the world. I have specifications for about twenty-five experiments. At Naples we performed about sixty experiments, divided into four classes of tests."

The advocates of Koreshanity can see no reason why their doctrines should not become widely prevalent. They say it will gain a firm foothold in the world, unless some

one overthrows it, which nobody, they claim, has yet done. As a matter of fact, they are anxious for some recognized scientist to undertake to disprove their doctrines by practical demonstrations.

Reverse of Popular Theories.

"The Koreshan System," said Prof. Morrow last night, "is radically different from all other modern theories—it is not a partial difference, but the absolute antithesis. In other words, the conclusions in all lines of thought, in all phases of science, economics, and religion, are the exact reverse of the usual conceptions. That means, primarily, that we reverse the order of thought; we reason deductively—that is, from cause to effect, as well as from effect to cause. We reason from the standpoint of fixed principles, as well as from evidences of phenomena. Illustrative of to what extent ours are the reverse of other theories, we hold that we live on the inside of the earth instead of on the outside, in the limitation of the universe instead of its infinity, in the eternity of nature in preference to a brief existence of the material universe. We hold that God is central instead of circumferential; that he possesses a tangible manhood instead of being an infinite Spirit; that he is inseparably connected with his universe of expression instead of being extra-cosmical or of existing over and above the universal order of existence. We hold that alchemy instead of chemistry is true. We teach a form of government that is the unity of all forms of government in the world today, involved in one order of control.

"Doesn't the Koreshan System seem absurd?"

"Yes, if one undertakes to account for phenomena in the hollow globe as men are used to do from the external standpoint. In that way, of course, it would appear

absurd. For instance, if I conclude that the sun is 886,000 miles in diameter and accept that supposition as a fact, why, I would be foolish for supposing that a big sun like that could go in a little earth 8,000 miles in diameter. If the earth is concave, the sun is not 886,000 miles in diameter. But measured from the concave instead of the convex arc its diameter would not be over 100 miles, and its distance not above 1,000. It makes all the difference in the world as to whether our calculations are made from the basis of concave arc and the usual convex idea. The sun, moon, and stars, including Sirius, Arcturus, Procyon, all the great nebulae and comets, in short, all things that exist in the heavens above are contained in the shell. They are not worlds nor systems of worlds; they are not wanderers nor erratic orbs, but points of generation of energy, every one of which has a distinctly different function belonging and necessary to universal perpetuation. The functions of the planets, the purpose of the stars, and order of their movements, are specifically indicated and explained in the Koreshan Cosmogony. It claims to explain the universe. It holds that there are no mysteries it does not reveal, no problems it does not solve. The secret is claimed to have been found, the 'philosopher's stone' is being applied, the circle has been squared, baser metals have been transmuted into gold, the Bible is now understood, and its laws clearly analyzed by the Founder of Koreshanity."

How Eclipses Occur.

"How do you account for the exact prediction of eclipses by the old school astronomers, if their system is not correct?" was asked.

"One thing is sure; if the Copernican system is true, the old Egyptian or Ptolemaic system was false. We might ask the usual questioner, How could Ptolemy predict eclipses if his system was not correct?"

"The old-school astronomy today owes more to the Egyptian astronomers and to Tycho Brahe than to Newton, Herschel, or Proctor. No theory of astronomy is considered in eclipse predictions; no concept of the universe can change its form or alter its motions or functions. Eclipses really occurred and were foretold before Copernicus ever whirled a school globe. Eclipses occur at regular intervals. An eclipse cycle is about eighteen years and eleven days in length. During that time twenty-nine lunar and forty-one solar eclipses occur. During the next cycle of eighteen years, these same eclipses happen again. Those who predict eclipses consult tables as the farmer consults his almanac. These tables are as accurate and as absolute as the calendar itself. This is the secret of eclipse predictions. A school boy could do it if he once saw behind the curtain, understood longitude and time, and the relations of the sun and moon on the ecliptic."

"How do you account for eclipses? Isn't the earth's shadow on the moon during a lunar eclipse, a proof of convexity?"

"The earth casts no shadow on the moon. If it did it could not be called an eclipse, for eclipse means 'to cut off.' In the old system, they would have to say the sun is eclipsed when the moon appears obscured. In our system, the moon is cut off and consequently eclipsed. The origin of the moon is in the earth's crust. Energies generated in the great metallic shell levitate toward the center. They implant an X-ray photograph of the earth's shell upon the under surface of the atmosphere of hydrogen lying just above our common air. On the surface of the moon we see a reflection of the earth's surface, modified by the photographic impressions of the denser substances beneath. If anything should cut off these energies or disturb the ascending magnetisms, that image would become more or less obscured. The obscuring

object, or the eclipsor, is the thing of particular question here. It is in the earth's crust—a mercurial disc passing in the interstices of the metallic shells. It actually cuts off the levitating currents. If the disc should be forced into a rectangular shape, the 'shadow' would appear to be square; but the disc is round, and consequently the 'shadow' is round; thus we see it is not necessary to suppose that the thing that eclipses the moon is a sphere. A disc does it just the same, and is no proof that the earth is convex, because instead of it being the earth, it is a small disc only a few miles in diameter that as effectually breaks the current as a very dense disc would cut off the cathode or the anode rays in the X-ray apparatus. The eclipse of the sun occurs by reason of a conjunction of sun and moon, causing an eclipse of the sun by a reflex of its own self, or its shadow. The theory is new to the world, and it requires a little study and investigation of what we conceive the universe to be, and how it generally conducts itself before the theory would appear to be clear in detail."

Circumnavigation of the Globe.

"How about the so called circumnavigation of the globe?"

"It is a circumnavigation of the globe. To get a good idea of the Koreshans' school globe, tear off the map from the usual one, divide the pasteboard globe into two hemispheres, and paste the map on the inside of the globe. The globe will then have two poles, one equator, one ecliptic, just as many meridians and parallels of latitude as when the map was on the outside. The route of a ship marked on the outside would sustain the same relations as to distance, latitude, and longitude to all points on the concave surface. As there are 360 degrees inside a circle or globe, the same as on the outside, the ship would finally return to the same point with a good deal safer journey, perhaps, than by sailing around on the outside of a sphere in rapid rotation

and motion through space. Our circumnavigation is simple and safe; the other is fraught with the difficulty of getting the oceans to stay on the outside."

"How do you explain what we call gravitation?"

"By proving that all gravic energies have a center of generation, and consequently, must be expressed radially in all directions from that center. Gravity really descends from above, consequently it has a tendency to push objects instead of pulling them. Light and heat are forms of gravic energy. That which is called gravity is but one of 10,000 qualities of descending gravic energy. Gravic energies are cathode, consequently they descend; levic energies are anode—hence they ascend. It is not scientific to hold that everything comes down and nothing goes up. The usual saying is, 'everything that goes up comes down.' This is universally true. It is the secret of the supply of the sun's fuel, the means of the perpetuation of the earth's shell. The specific gravity of a substance determines, in the universal arrangement, a plane of static balance or equilibration of every material of the universe. The lightest substances surround the central sun; the heaviest substances materialize and ponderate farthest from the sun. These constitute the two extremes of space. All other substances are forced to their planes of rest. Hence the phenomena of some substances rising when released, and others descending when left without support."

"What causes a ship's hull to disappear first when the vessel is sailing from shore?"

"Perspective foreshortening—the same thing that annihilates space, as it were, between two railroad tracks. When the ship has sailed to the vanishing point of the space equal to the altitude of the eye from the water, all of the ship's hull embraced within that vertical space will

become invisible; all the sails above that horizontal visual line will be still in view. Extend the visual power with the telescope, and the vanishing point is pushed farther away, according to the power of the eyepiece, and the hull is seen to be in plain view."

Planets Not Populated.

"Are any of the planets inhabited?"

"No—not the planets we see up there in the sky. They are little focal points of energy, partially materialized spheres in process of combustion. Their diameter is very small. Jupiter is nothing like the concept in the usual theory. The real planets are discs of mercury in the earth, between the metallic shells; they are concave to the center. They focalize the sun's energies in the atmospheres above us. They are what their names indicate—plan-ets, little planes. Schiaparelli, with his canals on Mars; Tesla, with his chimerical communications to imaginary people on the planets; the theosophists, with their evolution of life from earth to Mars; to Jupiter—to anywhere else?—will all vanish as well meant, but futile efforts to do something great, when it is generally realized that the conclusions of the old systems are absurd and impossible."

"How about the comets?"

"Comets are small things—lenticular reflections of the sun's rays through lenses—broken up belts of crystallic energies spirating about the central solar sphere. They have cycles of manifestation. They do not fly off into space and return. They plunge into and feed the sun. There is a great variety of comets. Some comet cycles are longer than others—the periodic appearances of some comets are not so frequent as others."

"Why can we not see across the hollow globe, like a fly in a hollow vessel?"

"Because the atmospheres intervene. They are of different density. They refract rays of light and vision. We see but little farther than the upper stratum of our air. The effect of refraction between the air and hydrogen causes the limit of our vision above to appear blue, and to obscure all within and beyond the sea of hydrogen. The sun, moon, and stars that we see daily, are near the junction of our atmosphere and hydrogen."

"What is on the outside of the hollow globe you call the earth?"

"The shell of the earth is the circumference—the limit of the universe. It environis all that exists. Outside of the environ or limit of existence, there is nothing. There is no infinite space. Space is measure and dimension of things that are; it is definite. Limitation is a factor of form; form is a factor of existence. Hence if the universe exists it is limited, beyond which there is no existence. There is nothing on the outside—no heat, cold, light, darkness, temperature, condition, entity, quality of substance—nothing. There couldn't be. Nothing cannot extend at all; matter could not extend eternally. No matter how absurd this may be to the average person, sufficient thought on the problem will reveal the fact that our conclusions as to what is not on the outside are reasonable, logical, and absolute."

Theory of Creation.

"What do you hold with reference to the creation?"

"That the universe is eternal—as eternal as the Almighty. He says that it is his footstool, and it seems to be necessary to him now, as the ultimate pediment of his being; and consequently, he always has and always will need this footstool. Creation is continuous and eternal. The processes are now going on, and the laws of the creation of the universe can only be read through an accu-

rate understanding of the character of that which is created. We accept Moses' account of creation thousands of years ago. It will occur again, and has occurred millions of times. As to form, the universe always was; it must have its rest and recreation, which mean re-creation."

"What supports the earth in its present position?"

"It is not supported—it needs no support. It is suspended; it is dependent upon its center. The center of the earth is the terminal point of interior space. It is the absolute pivot. Job says the Almighty 'stretched the north out over the empty place and hung the earth upon nothing'—upon the absolute pivotal center. He did not hang it upon long threads of gravic something. There is nothing outside to attract the earth, and hence it can never move out of the only space—place—there is. To do so would be to force the hollow globe into nothing."

"What is the cause of day and night?"

"The central solar sphere is light on one side and dark on the other. The sun we see is a refocalization of the central sun. The central sun rotates on its axis in twenty-four hours, thereby causing the projected sun to make its daily orbital sweep of 360 degrees. The projected sun shines upon one half of the concave sphere at any given time, leaving the other half dark. In this way, we have alternations of day and night."

IS THE COPERNICAN THEORY ALL WRONG?

The Geodetic Staff, recently engaged on surveys on the Gulf of Mexico and coast of Florida in connection with the body of mystics and socialists called the Koreshan Unity, has obtained results startlingly contradictory of the ordinarily accepted notions. They have suspended the plumb-line; from this, at right angles, they have extended an air

line which invariably strikes the earth (or rather the sea). They claim to have demonstrated that the earth curves eight inches to the mile, not convexly, but concavely. The result of the investigations of "Parallax" in England, it will be remembered, were also irreconcilable with the Copernican theory.

Will not the recognized experts of science take the matter up and show wherein lies the mistake of these investigators? Ordinary men are quite puzzled over it, and cannot answer.—*Brotherhood, London, July, 1897.*

The Hollow Globe and the Bible.

The Cellular Cosmogony Demonstrates the Truth of the Astronomy of the Scriptures.

Texts Concerning the Earth's Concavity, the Relations of the Earth, Sun, Moon, and Stars; Scientific Demonstration of the Firmamental Environ.

THE attitude of the modern scientist toward the Bible, evinces the fact that between the Bible and the cosmogony founded upon the popular astronomical system, there is a great disparity. The systems of science now prevailing in the world are decidedly atheistical in their tendencies, and the hypotheses and theories they involve are the battle-axes of all "higher criticism." The cry of all skeptically inclined, from the school of the "new theology" of Dr. Briggs to the agnosticism and atheism of Ingersoll, is, that the Bible is not scientific.

The defense offered in the orthodox pulpit is, that the Bible is "intended to be a religious, and *not* a scientific revelation; if a natural philosopher had undertaken to write

an account of the creation of the earth, he would have begun in a totally different tone." They say the Bible is inspired, but not inspired scientifically, and therefore, the astronomy of the Bible is not correct. They present this as an excuse for the "blunders" the Bible makes concerning the cosmogony and science of the universe. The atheist plants himself squarely upon the accepted theory of modern astronomy, and from this basis—from this standpoint, he successfully assails the position taken in Christendom concerning the inerrancy of the Scriptures; and the popular theologian is powerless to defend the Bible against the repeated attacks made upon it by those endeavoring to test the book by the modern pseudo-science.

The subject reduced to a definite issue, will compel the mind to accept either the Bible or the prevailing theory. We hold that the two cannot be consistently entertained in the same mind; consistently, we say, because all familiar with the history of ecclesiasticism and astronomy are fully aware of the difficulty which modern theologians have experienced in the endeavor to harmonize Moses' presentation of cosmogony with the nebular hypothesis. The atheist is continually pointing out this difficulty; the doctors of divinity close their eyes to the real basis of the argument, and blindly and credulously hope that in some way the Bible may be found to be correct.

It seems never to have occurred to the modern clergy, that there is a possibility of "science" being deeply in error. They have accepted "science" in the same way they have accepted the Bible—without evidence. The question must be settled by something superior to the authority of the scientists; by something stronger than the usual arguments offered from the pulpit, because the theo-

logian does not prove to the skeptic that the Bible is scientifically accurate, and consequently he does not prove that the Bible is inspired; while on the other hand, the scientists cannot prove that the basis of the modern astronomical system is correct. A system of science admittedly inaccurate and uncertain, and having for its foundation a mere hypothesis, is a poor thing with which to attempt to disprove the inspiration of the Scriptures. It would be sheer folly and the height of credulity to accept such a mogul as the plumb-line of wisdom, by which to formulate a concept of our origin and destiny ! If the modern system of science, so called, can be proven to be a fallacy, there is a possibility that the Bible is correct, not only in its cosmogony, but in all its teachings. Indeed, we find that the facts which demonstrate the fallacy of modern science, not only demonstrate the earth's true form, but also corroborate the science of the Bible. Thus both the Bible and Koreshan Science, their teachings being one and the same, are opposed to the prevailing scientific theories.

The science of the universe must necessarily be the science of its creation; true science is the science of cosmogony as well as the science of cosmology and cosmography. Any science, to be in harmony with the Bible—in order to cover the same ground, must deal not only with the laws of the form of the universe, but also the laws of its creation and perpetuity; it must connect, unmistakably, the idea of God and the science of his expression in cosmic form—it must show how he stands upon his footstool. Theology and the science of cosmogony are inseparable. True theology cannot be linked with a fallacious theory of astronomy, neither can the true science of creation be seen to be in harmony with the false conception of the func-

tions of the Creator. The relation between the divine mind and its expression in the material world must be complete and perfect. A so called science that does not point this out and lead the mind to the source of cosmic expression, is not worthy of the time applied to its study; a science that clearly and unmistakably establishes the principles of this relation becomes the established and basic premise of all truth, not only of theology, but also of the science of the laws of the perpetuity of universal being and existence.

We find nothing in modern astronomy that indicates what the laws of creation are—nothing to solve the great mystery of Being. It does not point out the source of existence, nor the laws of perpetuity. As it knows nothing about the laws of creation, it contains nothing true about the science of cosmic form; as it contains nothing about the laws of physical creation, it is far from revealing the laws and functions of the divine being; it cannot point out God ! There is nothing in it to suggest any specific relation between God and the material world. It has no use for the laws of analogy, analysis, and synthesis—it cannot show that the universe is a world of organic unity. Hence, there is no harmony between its aims and purposes, and the design of the Author of the Bible !

The Koreshan and Copernican Systems Compared.

The world has been taught for centuries that the earth is convex; that it is a large globe filled with molten matter, —a crust surrounding and enclosing the great mass of fire, and that we live on the outside; that the earth, compared with the universe, is but a mere speck in the vast ocean of infinite space, having been evolved through a pro-

cess of development from a vortex of revolution of the burning mass of the sun. The popular system teaches the rotation of the earth upon its axis once in twenty-four hours, and its revolution around the sun in one year. It places the sun 92,000,000 miles from the earth, and maintains that around the sun revolves a family of planets and satellites.

Relatively, the sun is the center of the solar system, the earth moving about it at the rate of about nineteen miles per second. The universe is held to be limitless, without center and without circumference, filling infinite space; it knows no bounds—it is one vast ocean filled with worlds. What their relations are no so called scientist knows; the origin of all things is today a great unsolved problem; and the purpose of existence is a question equally difficult. There is nothing to be learned from a study of such an hypothesis. Its laws must be as uncertain as the knowledge of its advocates; it is as full of freaks as the modern scientific mind is full of vagaries. From the claims of the infinity of the universe, it sums up nothing; from it there can be no definite conclusions reached; not being in possession of the true conception of cosmic form and function—having no idea as to the cause, purpose, and design of the universe, men seek to find sublimity in its vastness, and grandeur in the dazzling orbs; it fills no wants, meets no necessities nor exigencies of the times; the theory will accomplish only that which it is capable of putting forth—nothing!

The Koreshan System maintains and demonstrates that the universe is a unit; it is an alchemico-organic structure, limited to the dimensions of 8,000 miles diameter. According to the great law of analogy, we hold that its form is

cellular; that all life is generated in a cell—*omne vivum ex ovo!* The earth's shell, composed of metals and minerals, is about 100 miles in thickness, constituting a gigantic voltaic pile, the basis of the great galvano-magnetic battery, furnishing the negative elements of the cell for the generation and supply of the sun's fuel. The concave surface of the earth alone is habitable. Superimposed upon the strata of the shell and emplaced in their static planes, are the three atmospheres. At the center we find the positive pole of the great battery—the central sun, around and with which the heavens revolve in twenty-four hours. All of the energies of the physical universe are engendered through the relation of the positive center to the negative circumference; a great complex battery of physical unity is thus maintained and perpetuated.

The sun proper is located at the center, rotating on its axis; its projection, the sun we see, has an orbital path on the ecliptic. The planets are spheres of energy reflected from metallic discs in the earth's circumference, and the stars are focal points of light. The moon is a sphere of energy derived from the planets and from the magneto-electric energies generated in the earth's concave crust. The whole is eternal; it is God's footstool, and is essential to his existence; it is the ultimate and outermost limit of expression of the divine mind. The earth is the *only* physical world; it has no orbital motion; it is fixed and relatively stationary, while the sun, moon, planets, and stars move in orbits in the heavens above us; they are inseparably connected with the universe. Their functions, as defined in the Koreshan System, prove their utility and demonstrate what they are. The laws of cosmic form and function—the laws of creation, maintenance, and purpose of the

universe, with all it contains, are scientifically revealed and described in the Bible. The Koreshan System corroborates the Scriptural Cosmogony in its geometric and geodetic demonstrations of the earth's concavity, and settles the question of the inspiration of the Bible.

The Firmament is the Circumferential Environ.

In the Bible the word "firmament" is used. The first syllable of the word is suggestive of its meaning; but the Hebrew word *rakayia* conveys an idea of the character of the firmament; it not only conveys the idea of expanse, but that the substances of which the expanse is constructed are solids. *Rakayia* means hammered-out plates or laminae, from *rakah*, to beat. The word firmament means plates or strata of metal. Applied to the universal environ, it means metallic shells or strata surrounding and enclosing the world. The conclusions of modern astronomy, that we are living on the exterior surface of the earth, with an infinity of unenclosed space extending in every direction, can afford no explanation of the Scriptural firmament. Proctor ridiculed Moses' conception of astronomy because he wrote of a solid shell enclosing the universe; and another has said: "Don't you know that the man who wrote that book believed the firmament to be a solid affair?"

That such metallic strata constitute the foundation of the universe, can be scientifically demonstrated. We have only to observe a few facts in nature, and ascertain the specific gravity of all substances, to know their emplacement in the universal form. Substances lighter than the atmosphere seek to rise above it. When lighter substances have reached their static plane they cease to ascend. Substances heavier than the atmosphere seek to go below the

atmospheric plane; if released and left free to fall as far as they will, they do not go down forever, but only to the planes in which they find their rest points or static balance. The heaviest metal, therefore, would gravitate to the lowest point, the next lighter above that, and so on throughout the list of all substances of which the universe is composed.

The sun is the center from which gravitate all the energies generated in it. Light, heat, and thousands of other qualities of solar and gravic energies radiate, and consequently descend or gravitate from the solar center to the circumference. The lighter substances of the universe surround the solar center, and the arrangement and emplacement of all substances and of all planes or strata, obtain from the relations of their specific gravity; they materialize at the place of their balance,—the heaviest outermost. The circle of deposition of each substance is equidistant from the gravic center in all directions from that center, thus constituting each plane a distinct sphere or shell of the environ. The material universe is a shell, composed of metallic and mineral strata; the crust of the earth is about one hundred miles in thickness, embracing a dimension of about 8,000 miles diameter. The seven metallic and five mineral strata constitute the twelve foundations upon which the geologic strata of earth are founded. Mic. vi:2; Job xxxviii: 4-6; Psa. civ: 5; Heb. i:10; Jer. xxxi:37.

By processes of contraction and expansion, these laminae or plates beat and thus decompose and recompose each other; and by these processes they generate energies that perpetuate the stars; they are, therefore, the foundations of the stars, for without them there could be no stellar reflections. The strata of the earth's shell, therefore, are the *rakayia* or "firmament of heaven," in which the stars

are set or formed. Through the reflection of energies from the sun, and through the generation and levitation of energies in the strata, and consequently by means of the firmament, the "waters above the firmament" (the sea of hydrogen—the water producer) are divided from the waters beneath. Gen. i:6,14-17.

That the earth is "founded upon the seas and established upon the floods," (Psa. xxiv:2; cxxxvi:6) is a scientific fact. The beating, decomposing, and recomposing processes which stratify the substances of the earth's crust, obtain at the conjunction of the atmospheres and at the water's surface. Gravie energies hold in solution gold, mercury, silver, zinc, copper, tin, iron, etc., and these substances are deposited in the waters of the oceans and seas. Thus salt water holds in solution all of the so called elements of the universe, and the earth is continually being recomposed from the elements in the water. The waters thus become the support of the earth; they continually supply the material, depositing the same as sediment.

The elements of these substances are derived from the actinic action of the sun's rays; as for instance, the action of the chlorine of the sun upon the sodium of the water, producing the saline, and from thence the calcium particles. As the chloride of sodium deposits where the solar energy meets the ozone of sodium, so gold and other substances deposit where the solar rays meet their corresponding mates in the levic energies ascending to meet the gravic energies holding the cathode gold and other solutions.

The "Hollow of His Hand" the Earth's Concavity.

Superimposed upon the seven metallic strata are five mineral strata, upon which are laid the geologic strata,

comprising the soil of the earth. This makes the earth's surface concave to the center of gravity and levity—concave to the central sun. The Scriptures refer in a striking manner in several instances to the earth's concavity, indicating that its inner surface is habitable, and to the fact that we live on the inside instead of on the outside, as indicated in the Lord's prayer: "Thy will be done *in* earth as it is in heaven." More than a dozen times the phrase "in earth" is used in the Bible.

Every part of the concave earth is directly beneath the sun; every square inch of its surface is "*under the sun*." In Ecclesiastes alone the phrase "*under the sun*" is used more than a score of times; as Eccl. i:9,14; ii:11-22; iii:16 to x:5. According to Scripture usage, the heavens are above us; all perpendiculars extend vertically to the solar center, converging at the center of the earth; every tree, shrub, and weed, every human being standing erect, indicates the direction of the astral center; and every minaret, cupola, dome, monument, and church spire, points to the center of the universe. A surface from which all perpendiculars converge above it is necessarily concave.

The surface upon which the seas and oceans rest is a concavity. "Who hath measured the waters in the hollow [concavity] of his hand, and meted out heaven with the span, and comprehended the dust of the earth in a measure, weighed the mountains in scales, and the hills in a balance?" Isa. xl:12. Applied to universal form, which is the ultimate and outermost expression of the mind of Deity, in which form are contained all the waters in equilibration, this would indicate that the earth is hollow. In symbolism, the hand is the ultimate of power; the universe is the ultimate and outermost expression and limit of

its interior life; the surface upon which the waters rest is concave; the world in which the strata of earth are "weighed" and find their static "balance," is hollow. The waters are held in, and consequently conform in contour to the concave surface; that surface constitutes the "bounds" with which the waters are "compassed." "He hath compassed [Heb. *chug*, encircled, environed] the waters with a bound" [*chug*, limit, boundary], (Job xxvi:10); "Thou hast set all the borders [*gebulah*, enclosures, enclosed places] of the earth." Psa. lxxiv:17.

The Arc and the Chord of Arc.

The foundation of the Koreshan Cosmogony is, that any part of the earth's surface constitutes the arc of a circle, the extension of which completes the circumference of about 25,000 miles. The Founder of the Koreshan System, having discovered the true relations and laws of cosmic form and function, has for twenty-seven years maintained that a line at right angles to the perpendicular at a given point, extended as a rectiline, will come in contact with the water's surface at a distance determined by known ratio of the earth's curvation. The extension of such a line from the perpendicular is the sine of arc, the cosine of which completes the chord, the extremities of which extend into the water equidistant from the perpendicular. This is the absolute demonstration of the earth's concavity, and a complete corroboration of the testimony of the Bible concerning the arc and chord. That such arc and chord are indicated in the Scriptures, may be seen from the following:

"It is he that sitteth on the circle [Heb. *chug*, arc, compass, sphere] of the earth" (Isa. xl: 22); "He set a compass [*chug*, arc, circle, sphere] upon the face of the

depth" (Prov. viii: 27). The words "circle" and "compass" here employed do not mean a circular line or ring set upon a flat surface, but a circular form curving in more directions than a circle upon a plane; they embrace the idea of limit, environ, arc, compass, and sphere. The earth's surface is spread upon its foundations (Isa. xliv:24), equidistant from the solar sphere.

"Where wast thou when I laid the foundations of the earth? * * Who hath laid the measures [environ, robes, strata] * * thereof, or who hath *stretched the line upon it?*" Job xxxviii: 4-6. The "man with the measuring line in his hand" (Zech. ii:1; Ezek. xlvi:3; II. Ki. xxi:13; Zech. iv: 10), the one that stands "upon a wall made by a plumb-line, with a plumb-line in his hand" (Amos vii:7)—KORESH, the one bringing the knowledge of the laws of cosmic form, the one making the most remarkable discovery of modern times—the fact of the cellular form of the universe, the one who, by practical and scientific application of the plumb-line and level, will "turn wise men backward and make their knowledge foolishness" (Isa. xliv:25-28). Judgment will he "lay to the line, and righteousness to the plummet; and the hail [crystallized truth] shall sweep away the refuge of lies" (Isa. xxvii: 15-21); He shall stand and "measure the earth" (Hab. iii:6) geodetically, by the extension of the horizontal as "air line," or rectiline; "stretching the line upon it" as the chord of arc, in demonstration of the earth's true contour!

What and Where are the Physical Heavens?

In Scripture usage, the heavens are above us (Ex. xx:4; Job xxviii:24; xxxvii:3); in Koreshan Science, all perpendiculars extend through the heavens, converging at

the astral center. Consequently, the heavens do not surround the earth as in the popular system, but the earth circumferentiates the heavens. The heavens are spherical, and this idea is conveyed in, "He walketh in the circuit [*chug*, arc, circle, sphere] of heaven" Job xxii:14); "Knowest thou the ordinances [*chuqah*, statute, limitation, arc, sphere] of the heavens?" (Job xxxviii:33). "He compasseth the heavens with a circle" (Apoc., Eccl. xiii: 12).

There are three physical heavens, corresponding to the three heavens in another domain (II Cor. xii: 2), and these three heavens are the three atmospheres which surround the astral center and fill the intervening space between the center and circumference of the earth. These atmospheres being of different density and spherical in form, do not admit of direct vision of the solar center. Like curtains (Psa. civ:2; Isa. xl:22), their expanse prevents direct view of what is beyond the limit of the outer heaven, or our atmosphere. That there are more heavens than one, is evidenced by the fact that the word "heavens" (plural) is used in the Bible more than one hundred and twenty-five times.

The heavens contain the energies of the universe; they occupy the space through which the energies generated in the great galvano-magnetic battery levitate and gravitate; the heavens contain the sun, moon, planets, and stars, which are supplied and maintained by the ascending or levic energies; the energies of the heavens are levitated, or heaved up; and consequently, the "heavens" are what the term implies—*shamayim*, which means "heaved-up things." They are lighter than the earth, and hence are above it, the substances of which the heavens are composed being emplaced according to their specific gravity and lev-

ity. The limit to which these substances levitate is the center itself; the atmosphere surrounding and contiguous to the solar sphere is the highest heaven, and our atmosphere the lowest. The motion of the heavens according to the Scriptures, may be seen in their relation to the sun, moon, and constellations.

Sun, Moon, and Stars—Their Location and Motion.

The Koreshan System maintains that the heavenly bodies move in orbits, revolving with the heavens in twenty-four hours. The Scriptures also, in their reference to the orbs above us, invariably teach the revolution and movement of these "lights" in a stationary earth. Two great lights were made to rule the day and night (Gen. i:16,17; Psa. cxxxvi:8), the sun, moon, and stars being, not great worlds, but centers of combustion, in which there is generated, and from which radiates light to shine upon the earth. The revolution of the sun, not the rotation of the earth, is the cause of the alternations of light and darkness upon the surface of the shell. The meaning of the word sun, from the Hebrew *shemesh*, is a ministrant "Let there be lights in the firmament of heaven to divide the day from the night, and let them be for signs and seasons, and for days and years" (Gen. i:14; viii: 22); "He appointed the moon for seasons, and the sun knoweth his going down" (Psa. civ: 19).

The central sun being the positive pole of the great universal battery, is the father of light, while the moon, the circumference, the shell of the earth itself, the negative and receptive form, is the mother. Through the refractive powers of the atmospheres, the central sun is projected (refocalized) upon the upper stratum of our atmosphere.

The central sun is projected from the center to its outermost focal point, forming the visible sun. The moon we see is projected or reflected from the great concave mirrors, the metallic strata in the circumference; this moon is a sphere of force in the physical heavens, a sphere of crystallic energy, upon which is implanted the picture of the earth's surface. The visible moon is a gravosphere or X-ray picture of the crust, hence we see light and dark places upon it, produced from the earth's surface and the geologic strata. The real moon is the laminae of the earth's shell, hence the Scriptural expression, "round tires like the moon" (Isa. iii: 18). The sun is the center, the moon the circumference; the image or focalization of each we see in the physical heavens. The moon does not shine borrowed light directly, as in the Copernican system; the sun and moon are two great lights; each shines a light of its own, the light of the moon being derived from thousands of qualities of solar energies, after utilization, transmutation, and metamorphosis in the great shell.

That the sun, moon, and stars are in motion, the Scriptures emphatically declare. There is no more striking illustration of this fact than in the well-known incident of the stopping of the sun by Joshua (Josh. x:12,13). It is obvious that if the sun were not in motion, the narrative is either ridiculously false, or symbolism has no fundamental relation to material things. If the sun stopped for a whole day, it was in motion previous to its standing still; when the sun began motion again, it "went down" and the day was ended. From that day until this it has had an habitual motion in its orbit. Referring to this incident the prophet said: "The sun and moon stood still in their habitation" (Hab. iii: 11); "Did not the sun go back by his

means?" "In his time the sun went backward" (Apoc. Eccl. xlvi:1; xlviii:23). A similar occurrence is found in II Ki. xx:11, "And he brought the shadow [of the sun] ten degrees backward, by which it had gone down in the dial of Ahaz." Also, "So the sun returned ten degrees, by which degrees it was gone down." Isa. xxxviii:8.

The movement of the heavens and the orbs they contain may be seen in the sublime 19th Psalm: "The heavens declare the glory of God, and the firmament sheweth his handiwork. * * Their line [meridian] is gone out through all the earth [passing over every part of the surface]. * * In them hath he set a tabernacle for the sun, which is as a bridegroom coming out of his chamber, and rejoiceth as a strong man to run a race. His going forth is from the end of the heaven, and his circuit [Heb. *tequphah*, revolution] unto the ends of it." Also, "Swift as the sun in his course." Apoc., I Esdr. iv:34.

The phenomenon of sunrise, as explained in the Koreshan System, is not caused by the rotation of the earth, with apparent sunrise above the convex surface, as in the Copernican system; but by the sun coming into our sphere of vision, and thus bursting into view. A critical analysis of the words used in the Scriptures with reference to sunrise and sunset, will reveal the fact that in this as well as in all other features of cosmic science, the Koreshan Cosmogony is in harmony with and corroborative of the Scriptures. The Bible does not convey the idea that the sun ascends in the morning and goes down or descends in the evening, but that it comes into view, as in Eccl. 1:5; "The sun ariseth [Heb. *zarach*, bursts forth], and the sun goeth down [bo, goes in], and hasteth to the place where he arose" [*zarach*, bursts forth]. With reference to sun-

rise, this word *zarach* is used in the Bible scores of times; as in Psa. civ:22; Jonah iv:8; Nah. iii:17; Job ix:7; Gen. xxxii:31. Also, "The sun shall come forth on the earth." Apoc., Jud. xiv: 2.

Likewise, sunset in the Koreshan System is corroborative of the correct usage of the Scripture terms employed in reference to this phenomenon. The sun passes beyond the sphere of vision and goes into obscurity; it goes out over the earth beyond the sea of hydrogen and arc of the heavens. Wherever the words "go down," and in some places "set," etc., are used with reference to the sun at evening, they are translated erroneously from the Hebrew word *bo*, which means to go in, as in Gen. xv:17, "When the sun went down" [*bo*]; also in Gen. xxviii:11; Ex. xxii:26; Deut. xxiv:15; Josh. x:13, and many others. Also in Mark i:32, and Luke iv:40; "And at even when the sun was set" [*δυνω*, to go in, not go down].

To determine its accuracy, the Bible must be tested, not by the current and popular fallacy, but by a system of science, the fundamentals of which are susceptible of absolute demonstration. The Koreshan System alone scientifically defends the Scriptures. The Bible is scientifically correct; KORESH, the divine and natural scientist, is its sole interpreter and expositor !

Addendum.

Astronomy's False Foundation.

A Lesson on Perspective, Exposing the Character of a Popular Hypothesis.

BY KORESH.

SAYS DARWIN, in "Animals and Plants," Vol. I, page 9: "In scientific investigations it is permitted to invent any hypothesis, and if it explains various large and independent classes of facts it rises to the rank of a well-grounded theory." It is to this absurd proposition that the most of our "scientific" theories, if not all of them, owe their existence. He further says, that "the undulations of ether and even its existence are hypothetical, yet every one now admits the undulatory theory of light." We agree with Darwin, that the undulatory theory of light is a mere hypothesis; that is, a mere guess, but we deny his statement that "everyone now admits the undulatory theory of light." "The principle of natural selection," he says, "may be looked at as a mere hypothesis, but rendered in some degree probable by what we positively know of the variability of organic beings in a state of nature,—by what we positively know of the struggle for existence, and the consequent almost inevitable preservation of favorable variations,—and from the analogical formation of domestic races."

Darwinism, as Darwin himself affirms, is predicated entirely upon "scientific" guesses; and these, he declares, constitute the basis of all scientific claims. Speaking of natural selection, he says: "Now, this hypothesis may be tested—and this seems to me to be the only fair and legitimate manner of considering the whole question—by trying whether it explains several large and independent classes of facts; such as the geological succession of organic beings, their distribution in past and present times, and their mutual affinities and homologies.

If the principle of natural selection does explain these and other large bodies of facts, it ought to be received."

"Please accept my theories," says the eminent "scientist," "because I can explain many things upon my hypothesis." The Koreshan Scientist might beg the question and say, please accept our theory of Universology, because there is not one thing that we cannot explain scientifically upon our premise. But we ask no man to accept *anything* on the basis of a mere hypothesis. A knowledge of the construction of the universe and its functions, with the laws and principles of life depending upon such knowledge, is too important a matter to be left to mere conjecture—mere hypothesis. No conclusion is certain which is not founded upon and grounded in a positively demonstrated premise. It is for this reason that the Koreshan System stands out distinct and unique. It predicates nothing upon guesswork; its first step in the discussion of any proposition, is the correct establishment and proof of its premise. Darwinism is a fair sample of the processes by which modern scientific conclusions are invariably reached. When in conversation with Professor Harkness, of the United States Naval Observatory, we asked him if the Copernican system was not predicated upon assumption, he replied: "We have to assume something." We maintain that if a premise be assumed, then the conclusion is equally an assumption.

Fact and Phenomenon Differentiated.

Let us take the principle of optics in its application to the definition of the phenomenon of the rotundity of the earth, as an illustration of correct reasoning from an established premise, as followed by the logician of the Koreshan School of Science. We herewith accompany our argument with diagrammatic illustrations of the principles involved in the argument. (See Plate IV.) Two lines may be extended parallel with each other, as in the case of the two rails of a railroad track. The diagrams represent certain known facts in optics, which we declare shall not be overruled, set aside, nor ignored for the purpose of sustaining an unwarrantable "scientific" theory. If any man

is too lazy to reason, or too mean to investigate another's reasoning, we do not expect to make any impression; or if he is so wedded to a theory because his grandfather believed in it, that he will not change his opinion for the truth's sake, he will naturally pass this argument by; but for the honest man there is only one alternative.

The two lines, *a f*, extending the length of diagram 1, Plate IV, may be taken to represent the tracks of a railroad, five feet apart. In the major premise of this proposition are involved the facts as they are, *not* as they appear. The measurement of the space at both ends of the track shows that the rails at each end are just five feet apart. There is no element of assumption in this part of the premise. We wish to thoroughly impress upon the student the fact, that so far we have not had to "assume something." The rails are straight and parallel, and five feet apart. These are facts of practical and certain measurement. From B to *c*, in either direction, the track indicates one mile (the entire length of the diagram representing two miles); in observing the distance from B to *c*, either way, the track *appears* to narrow down to a vanishing point at *c*. This appearance is the minor premise. Let it be remembered that the minor premise involves a fact, but that fact is an appearance involved in which are certain optical laws which we will apply logically in another part of this argument. Do not forget the fact that we are arguing from premises that are proven to be true, and that we differ from the ordinary "scientific" logician, in that we work from a demonstrated premise—not from an assumption.

Principles of Perspective and the Vanishing Point.

The purpose of this part of the argument is to show the reason for an appearance, which is in direct opposition to the fact. Why does the space five feet wide at *F F*, appear as a point at *c*? Note the dotted lines beginning at *S S*, and extending to the arrow; they make a comparatively long picture upon the surface indicated by the arrow. Now, note the dotted lines beginning at *F F*, and extending to the surface marked

retina. These lines vanish at the point upon the surface thus marked; for this reason they *appear* to come to a point at *c*. If we take this appearance as a fact, we are led into an interminable labyrinth of difficulties. The "scientist" establishes his assumptions upon these appearances, ignoring the facts and laws of optics. The objects *ed* are in fact at *ed*, as represented in diagram 1, Plate IV, but they appear to be at *c*. We are to distinguish the facts of *reality* from the facts of *appearance*, and show the character of the appearances, and how these appearances have led the short-sighted "scientists" into their aggregate of errors, which they delight to call by the title of science. Thus far there is no element of assumption; we assume nothing. We have shown that space is annihilated in appearance by the law of distal perspective; that foreshortening is an inevitable law of optics, and we hold that these laws are totally ignored by every so called scientific astronomer. The pseudo scientists shall not continue to foist their fallacious systems of astronomy upon a deluded public without a perpetual protest.

It will be remembered that diagram 1, Plate IV, represents the point of observation at *B*, from which the objective point is seen at *c*, but which in reality is at *F F*. The line *D D D*, extending to *c*, is not what it appears to be from the outlook or visual point at *B*. The apparent line at *c*, which appears to be only a line, is the entire breadth of five feet—the distance across the track at *F F*. If a middle rail extend midway between the two rails of the track, it will be seen the entire length of the line, or nearly so, and seem to blend with the two other rails at *c*; the five feet have vanished to a mere point, at *c*, therefore a space five feet wide appears like a mere line. The broader the space in perspective the more rapidly it vanishes by distal extense, as shown in comparison with the middle rail; and the narrower the space, the less rapidly it vanishes by distal extense. This principle belongs more exclusively to the effect on the retina itself. A balloon in passing out of visual range appears to diminish rapidly for the first few miles, after which it remains in view for a long time as a mere speck. These facts will have their application during the course of this argument.

Perspective and Geodetic Observations.

We subjoin a second diagram. (See Diagram 2, Plate IV.) Here we have two lines as in diagram 1, but we will employ them to represent parallel lines, one above the other instead of side by side, as in the first instance. The line *A A* appears to rise to *B B*, and the line *C C* appears to drop to *B B*, if viewed from the point *D*. The points *A A* and *C C* are visible, but they are seen as if at *B B*. Now, is there any man capable of thinking, who will be such an obstinate ass as to take this *appearance* as the *fact*, after the phenomenon has been pointed out to him? We have studied the phenomena of appearance in these principles of optics, and will now proceed to make an application of them to geodetic observation, keeping logically to the premise, never swerving from the established law of Koreshanity; namely, that assumption is no basis for the establishment of truth.

We subjoin the third diagram. (See Diagram 3, Plate IV.) In this we take the lower line of the second diagram, *A A*; we observe the points *A A* from the point *D*, but the principle of perspective or distal foreshortening causes the objects to appear at the points *B B*. This is not due to refraction, but it is due to distal foreshortening; the space from *A* to *K* has contracted and foreshortened to the point *B*. This law is operative, and applies to all space whether in the atmosphere, ethereal, or on the surface of the earth, terrestrial. If the line *A A* in diagram 3 represented a flat surface, a convex surface, or a concave surface, the phenomenon would be practically the same; a convexity or concavity of only eight inches to the mile would not appreciably affect the optical illusion. If the so called scientist is asked the question, Why does the earth viewed from a balloon look like a bowl? he will tell you it is because of atmospheric refraction.

If the laws of refraction will operate in an atmosphere of a uniform density, to distort the vision, what may we not expect regarding phenomena related to objects claimed to be outside our atmosphere? If the point *D*, in diagram 3, is two feet

above the line A A, at the distance of less than a mile the object at A on the lower line will be seen at B, in either direction. The law is the same whether the altitude be two feet and a half, five hundred feet, three miles, or any distance. A less or greater altitude could not change the principle nor alter the character of the phenomenon. The cross-piece at P is seen at A, but appears to be at B, because the standard, A P, is foreshortened down the two feet and a half. We have thus far shown certain facts, and optical phenomena connected with these facts. We have assumed *nothing* regarding the facts or the phenomena. We have interpreted the phenomena by defining the laws upon which they depend, and we challenge all the scientific men in the world to point out one inaccuracy either in the facts as presented and pertaining to the reality of the relation of the lines, or the facts of the optical phenomena.

Specific Statement of Minor Proposition.

We are now prepared to state a minor proposition. Lines or surfaces separated by narrow or broad spaces,—extended parallel with each other and viewed in perspective,—will appear to approach each other proportionate to their distance from each other and length of perspective. Let the surface of the earth be taken as one of these surfaces, and extend a line over this surface; that is, a visual or optical line. If we stand twenty feet above the surface of the earth and look toward the horizon, the horizon is seen on a level with the eye. If a roof could be extended parallel to the surface of the earth twenty feet above our lookout (forty feet above the earth), the two surfaces would appear to approach each other; the lower surface would seem to *rise* to a level with the eye, and the upper surface would appear to *drop* to a level with the eye,—that is, providing the two planes are extended the necessary distance. Now, if we remove the upper surface or plane, the lower plane will appear to rise to a level with the eye, just the same as when the upper plane occupied its position. It would not be occasioned either by refraction or convexity, but would be due to the operation of the principle of foreshortening. How a man can observe

this phenomenon and attribute it to anything but its true cause, and call himself scientific, is one of the enigmas of this so called enlightened age.

We have practically shown that the apparent rotundity or convexity of the earth is due to the optical illusion created by foreshortening. When it is assumed that the earth is convex, and in this assumption the simplest laws of optics are set aside and ignored, shall we quietly submit to the imposition and allow the world to continue in ignorance of the laws of cosmogonic form, or shall we place the facts in opposition to the assumptions as they obtain and are made to constitute the basis of scientific conclusions?

If a man stands by the side of one of the rails of a railroad track, say two feet from the rail, his line of vision will meet the rail at a point determined by the distance in perspective. This we need only state, for it is a well-known fact. No man will pretend to deny this, unless he be an absolute ignoramus. Then why should anyone deny the phenomenon as applied to the extense of any other line or plane? If the earth were concave, eight inches to the mile, which would be a practical level and an apparent straight plane, and we should apply the law of optics as described, in looking along a geolinear surface the earth would appear to rise in perspective much more rapidly than the eight inches to the mile would indicate. If we were twenty feet above the surface of the earth, the earth would rise to meet the line of vision and would appear to be convex. The scientific and honest man, before he projects a theory on the basis of appearance, would submit the appearance to a rigid analysis; he would prove his premise by the facts, and not ignore the most common principles and laws of optics as applied to geodesy. Let us demonstrate our premise, then reason logically, and we are certain of the truth. Let us assume our premise from mere appearance and then make our theory fit the premise, and we have just what the scientific world is attempting to cram down the throats of the credulous and unthinking public.

Geolinear Foreshortening and Mathematical Application.

Our sub-major proposition is, that a rigid mathematical calculation, founded upon the mathematical determination of the amount of foreshortening of the space between any two given parallel lines or planes in perspective, when applied to the surface of the earth, will determine the amount and direction of deviation which the surface of the earth describes, from a line extended from the point of observation, to the vanishing point. Let two lines be separated by a definite space, and extended parallel to a distance sufficient to obliterate the space by distal foreshortening. Extend these lines one mile parallel, a definite space intervening, then apply the same distance in length with the same space to any other two lines, and the same results would obtain. The truth of this statement is obvious to any candid person. If we make an observation along the side of a line which we suppose to deviate a few inches one way or the other, from a rectiline, and calculate the difference between the definite foreshortening of the known lines and space, and the space of the indefinite line, the difference is the amount of the deviation of the unknown line. This will also determine its direction. Let this principle be applied to the surface of the earth, and the demonstration will determine whether the earth is flat, convex, or concave; also the amount of deviation, if any, from a plane. The claim that the earth is convex, is made upon the mere appearance from optical effects, without any consideration of the laws of foreshortening, and the whole system of cosmogony is made to fit this absurdity.

Optics Wholly Ignored by the Astronomer.

We have pursued this argument from a known fact, and have applied a knowledge of the laws of optics as related to these facts, to the appearance of the surface of the earth as under the operation of these laws. We have shown that the laws of optics prevail and operate in the one case as in the other. We have shown that the laws of optics are

totally ignored by the "scientist" in his consideration, and that he attributes an appearance to the application of an imaginary and impossible operation. It is also demonstrated in this discussion, that the principle of refraction is used as an argument by the so called scientist, where the principle of refraction does not enter into the proposition. We have accounted for the appearance of rotundity on the basis of the known principles of foreshortening in perspective, which every sensible and conscientious man will admit to be obviously true. We have shown, then, that if the earth were an extended plane for ten thousand miles, a view from any altitude would give the earth the appearance of a rotund form, in dimension proportionate to the altitude; the greater the altitude, the larger the appearance. We have shown what every honest "scientist" admits; namely, that the whole system of the Copernican astronomy is predicated upon an assumption which has no tenable foundation; therefore we are justified in our challenge of the accuracy of the system of astronomy which now flourishes under the title of "science." We also assure our readers that the time has come which the eminent astronomer, Professor Woodhouse, of Cambridge, England, feared would meet the so called astronomical profession. He said: "However perfect our theory may appear, in our estimation, and however satisfactorily the Newtonian hypothesis may seem to account for all celestiai phenomena, yet we are compelled to admit the astounding truth that if our premise be disputed and our facts challenged, the whole range of astronomy does not contain the proofs of its own accuracy. Startling as this announcement may appear, it is nevertheless true; and astronomy would indeed be helpless, were it not for the implied approval of those whose authority is considered a guarantee of its truth. Should this sole refuge fail us, all our arguments, all our observations, all our boasted accuracy would be useless and the whole science of modern astronomy must fall to the ground." We have shown that the principles of optics have been left entirely out of consideration in the establishment of the Copernican hypothe-

sis, and that therefore it is not worth one thought as constituting a basis for cosmogonic conviction.

We now state our general proposition: The astronomers of note admit that the whole fabric of hypothesis called astronomy, is built upon an assumed premise of appearance. When a premise is assumed, the conclusion is necessarily an assumption. It is easy to fit a large aggregation of facts to any hypothesis; but this does not prove any proposition. An "hypothesis does not rise to the rank of a well-grounded theory," and never can so long as that hypothesis is predicated upon a premise that is itself not proven. The earth is of some definite form; this form is absolute, but it has never been fixed in the mind of the thinker for the reason that, up to the present time, the "scientific" world is looking for some positive proof of the earth's rotundity, its revolution on its axis, and its orbital motion. These have never, so far, been regarded as settled facts. Because of this uncertainty we claim the right to demand some better reasons than have ever been adduced, for the acceptation of the Copernican system of astronomy, and an examination into the reasons we have promulgated for a disavowal of present "scientific" claims.

PLATE No. I.

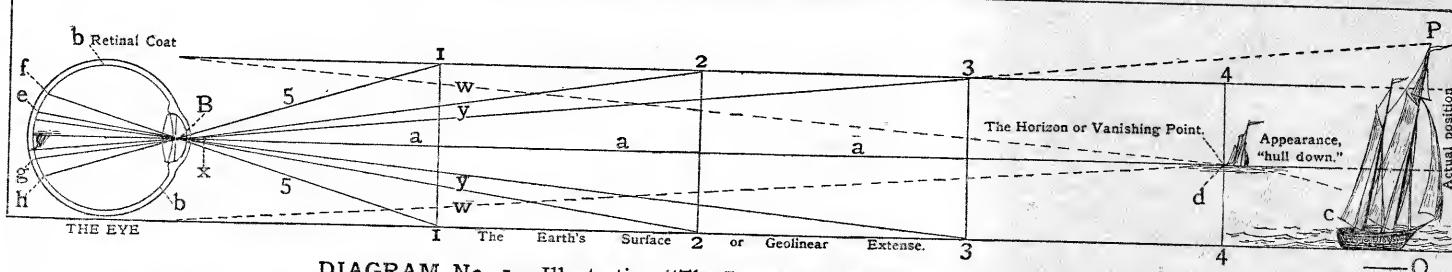


DIAGRAM No. 1.—Illustrating "The Laws of Visual Impression," Pages 32-34.
This Diagram illustrates a principle, not measurements true to Scale; the height of the objects is not proportioned to the distance.

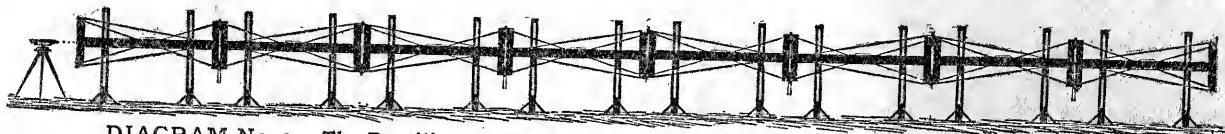


DIAGRAM No. 2.—The Rectilineator used in the Koreshan Geodetic Survey. Pages 26-39, 95-100.

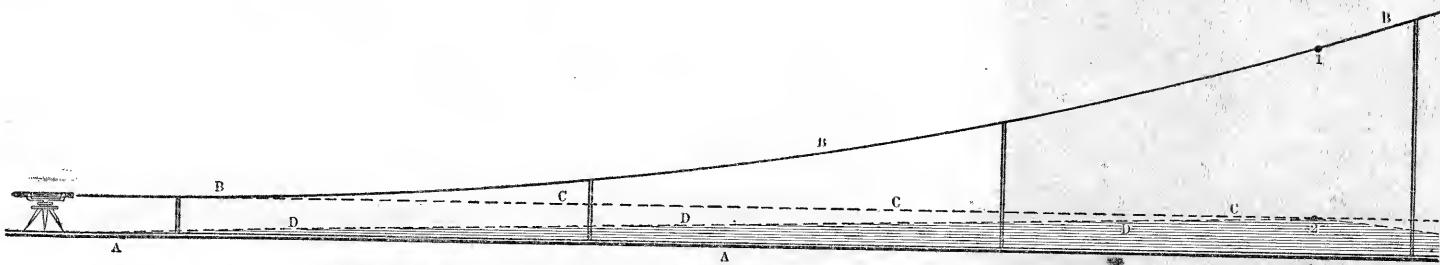


DIAGRAM No. 3.—Illustrating the Illusions of Optical Phenomena. Page 37.

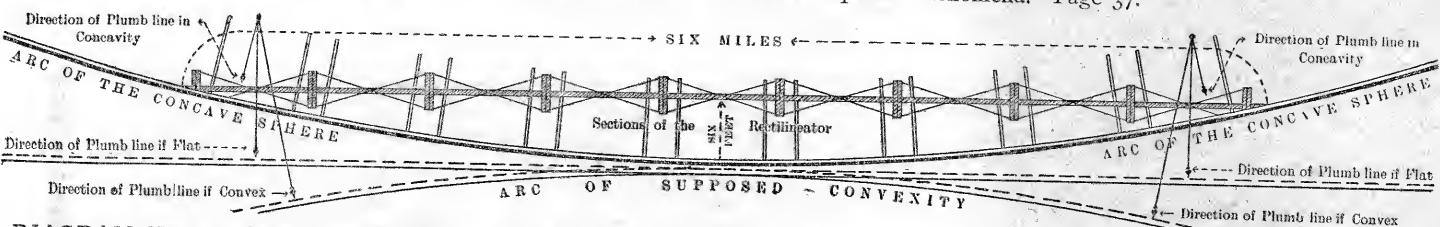
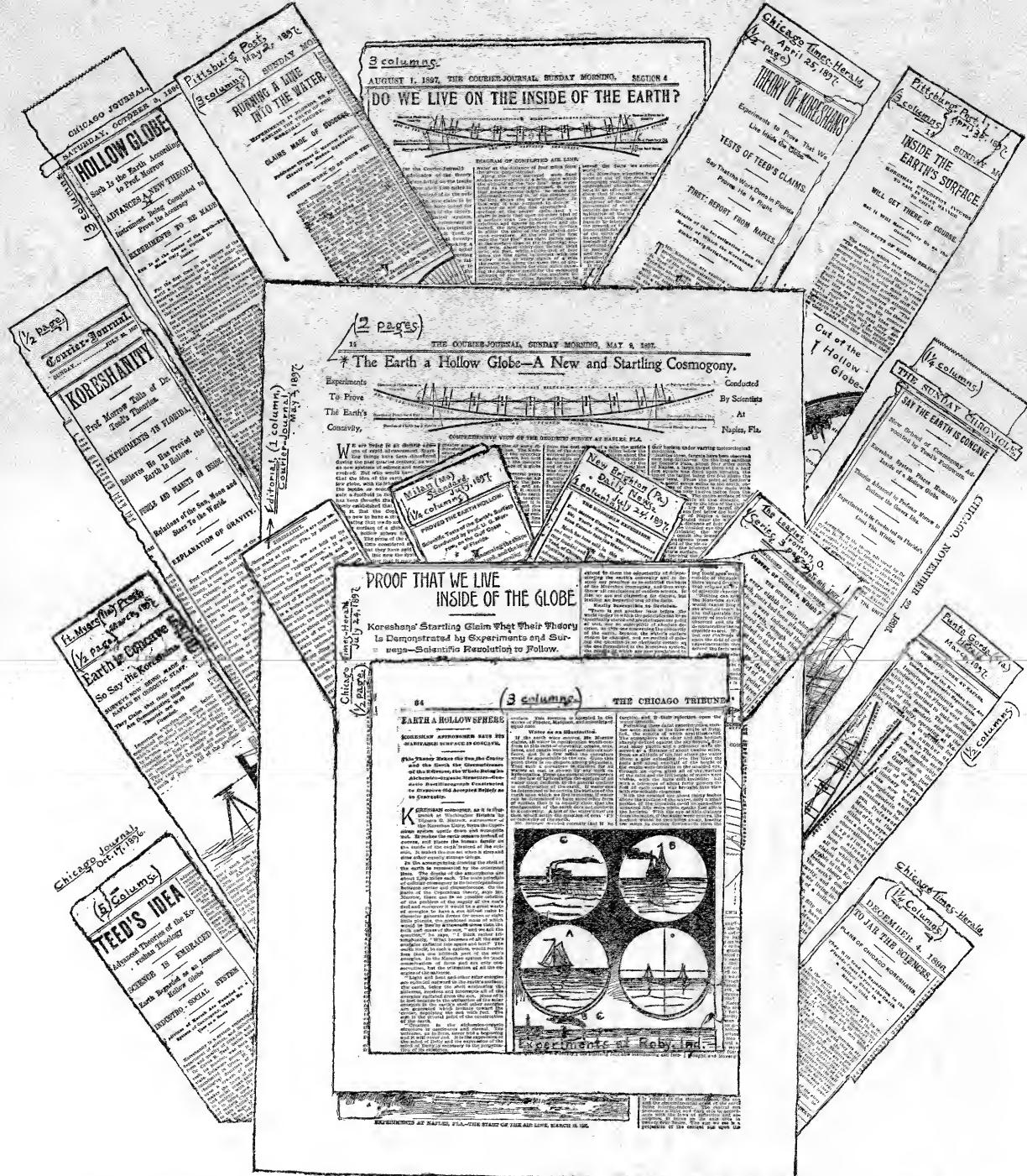


DIAGRAM No. 4.—Comprehensive View of the Air Line, showing use of the Rectilineator in Survey of Chord of Arc by the Koreshan Geodetic Staff at Naples, Fla. Pages 37, 109, 110, 129-130.



CUT No. 7.—Photographic etching of Newspaper Reports and Editorials, concerning the plans and work of the Koreshan Geodetic Expedition. In this Display only the Headings of the matter are exposed.

PLATE No. IV.

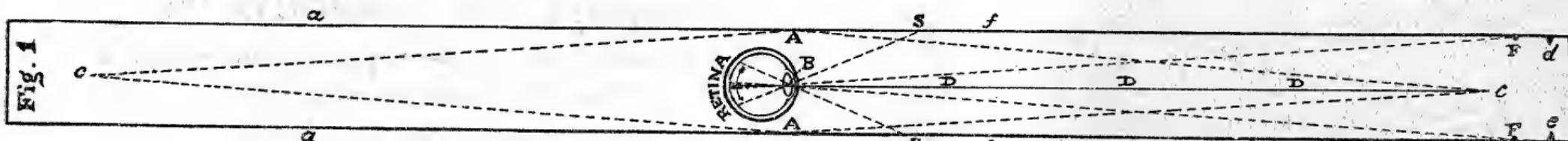


DIAGRAM No. 1.—Illustrating the Vanishing Point of Space between Parallel Railway Tracks.



DIAGRAM No. 2.—Showing Same Perspective Effect with One Rail Above the Other.



DIAGRAM No. 3.—Showing the Vanishing Point or Horizon of Geolinear Surface, with Upper Rail Removed.

In Retrospect and Prospect.

A Review of Developments in the Scientific World Since the Koreshan Survey.

PROF. U. G. MORROW.

"Koreshan Universology is predicated upon the basis of a calculus having for its premise an abundantly confirmed demonstration, which obviates every possibility of uncertainty. It comprises the first step toward universal knowledge, which it is the province of Koreshanity to place before the world."—KORESH, the Founder of Koreshan Universology.

"It is a wonderful thing to be upon a mountain and watch the scientific literature change. * * A general restatement of physical science is now due. The extensive researches in the higher phases and states of matter, beginning with Crookes, and extending to the present, have so enormously expanded all conceptions of Nature, that a vast work like Newton's *Principia* is urgently needed."—*Scientific American*.

IT IS WITH great satisfaction that we note at this time (now nearly ten years after the successful conduct of the series of experiments, including the Koreshan Geodetic Survey, that furnished the basis for the publication of this work,) the continued discomfiture of the opponents of the Koreshan Universology. Not only have they failed in all their attacks upon the System and its demonstrated premise, but they have found that radical changes in their own conclusions have been forced upon them by facts and discoveries which corroborate many of the scientific tenets set forth in the preceding chapters of this little volume.

During the past several years we have received from various sources all the so called arguments available in favor of the premise of modern astronomy; and also numerous "explanations" of the results of the Koreshan Survey already described in detail. The explanations are

in conflict with each other, and no one has taken a certain fact nor a recognized scientific principle as a basis of attempted overthrow of the Koreshan demonstrations. Readers of THE FLAMING SWORD have, during these several years elapsing since our scientific work in Florida, followed our replies from week to week, to our numerous critics—among whom are a few scientists of recognized standing. Professor Langley, of the Smithsonian Institution, has said that "while the views of those who regard the earth as a hollow sphere enclosing the solar and stellar systems, are inadmissible and even absurd, it is doubtful if any reasoning with members of this school is desirable, for they belong to a class upon whom sound arguments are wholly thrown away."

Professor Larkin, of the Mt. Lowe Observatory, undertook to explain our Geodetic Survey on the basis that "the south end of the line is 64 feet farther from the center of the earth than the north end. The earth is not exactly round. The equator is 13 miles (13.647) higher than the poles. From Florida to the equator it is up-hill all the way. They ran into the side of the hill, which they could not help doing." Professor Larkin's explanation is entirely out of harmony with the recognized principles of hydrostatics, and contradicts many of the best conclusions of his fellow astronomers. If the earth is bulged 13 miles higher at the equator than at the poles, it follows that the water level conforms to the ellipsoidal configuration; and if the earth were convex, the ratio of curvature would be practically unchanged by such bulge. There could be no *up-hill* slope on the sea, because *up-hill* and *down-hill* are terms used relative to inclines above sea level, not with reference to real or supposed difference of distance from the center of the earth. The *Scientific American*, dealing with another phase of the subject, corroborated with emphasis the Koreshan

conclusions regarding the sea level. Professor Larkin's conclusions are without any force whatever, as we clearly demonstrated in THE FLAMING SWORD for August 16, 1904.

It is impossible to note in this edition more than a very few points relative to principal developments in the scientific world since the publication of this volume in 1898, which has already run through a number of large editions. The accuracy of the Koreshan Survey has been questioned by a few critics. It has seemed to a number of people that the fine adjustments of the apparatus used would require almost superhuman skill. If that be so, then the work of the Government Geodetic Survey should be discredited on the basis of the same reasons. Geodesists have made many interesting estimates of the accuracy of the adjustments of their instruments. The average probable error of the Colby apparatus in use in Europe has been estimated to be only .0000015 of an inch; Struve, in making estimates, reduced the average nearly one half. Geodetic apparatus employed by the U. S. Government are susceptible of still greater accuracy. These apparatus are devised for the purpose of accurately measuring the distance between points. The method of adjustment is that of placing metal surfaces in contact. The Koreshan Geodetic apparatus differs from those employed by the Government, not in points of accuracy, but in form; the principles of adjustment are practically the same.

The Startling Testimony of Plumb-Lines.

A number of critics have held that experiments with plumb-lines suspended side by side for the purpose of determining whether the divergence of the lines should be upward or downward, would be a more satisfactory test of the earth's shape than the projection of an air line by mechanical means. The suspension of plumb-lines from

the top of the Washington Monument, or from the top of Eifel Tower, has been suggested to us. We have shown repeatedly that neither the Monument nor the Tower is high enough to admit of any appreciable divergence of the lines being manifest; for from an altitude of 500 or 1,000 feet, with the plumb-lines only a few feet apart, the difference of distance between the lines at top and bottom would be so small as to be beyond the possibility of definite and accurate measurement.

Concerning the subject of plumb-line experiments with the view to determining whether the earth's center be 4,000 miles beneath our feet or above our heads, we wrote in *THE FLAMING SWORD* for July, 1897, an article from which the following quotation is an extract:

"When men of the scientific world awake to the importance of a thorough investigation of the facts and revision of their present conclusions sufficient to suspend plumb-lines * * down the mining shafts a mile in depth at Calumet, Michigan, or into a similar one at Pittsburg, Pa., they will find a measurable divergence indicating that the perpendiculars extend from a central point in the physical heavens down to the earth's concave surface."

The fact that such experiments have been performed is very important; it is with satisfaction that we note them, for they were conducted four years after the article referred to above was written, with the results which we *knew* to be inevitable. In the Fall of 1901, the engineer at the Tamarack Mines, Calumet, Michigan, undertook to "plumb" a number of the shafts, for the purpose of constructing elevator shafts and ventilators; in the use of two plumb-lines, measuring the distance between the two at top and bottom, he found that they were *farther apart at the bottom*. He called the attention of Professor McNair, of the Michigan College of Mines, to the strange fact; and Professor

McNair assisted the engineer in conducting a number of experiments down several of the shafts, with practically the same results in all. The plumb-lines were 4,250 feet in length; the bobs of lead weighed sixty pounds each, and hung in vessels of oil at the bottom. The wires were of No. 24 piano wire. Concerning the experiments, we quote a paragraph from the *Milwaukee Sentinel* containing a report of the results:

"At another shaft the same phenomena were noticed, and with very little change, except that the divergence of the lines was even greater. Lead bobs instead of iron were used, but no change resulted. * * Several explanations have been offered for the fact that the wires supposed to hang parallel to each other, were *farther apart 4,250 feet below the surface than they were at the surface*, but no one has suggested anything that seems to cover the question. * * With no disturbing forces at work, there should be [according to the idea of the earth's convexity] a slight convergence."

The Tamarack Mine experiments attracted considerable attention among the scientists, who offered various explanations of the phenomena observed—and they gave almost every "reason" for the results *except the right one*, which was perhaps not suggested to their minds at all—that of the earth's concavity. Professor McNair was baffled and has been unable to arrive at any certain and satisfactory conclusion concerning the cause of the unexpected phenomena; he has, however, entertained a number of hypotheses, from the basis of which he, with the assistance of other engineers, repeated the experiments in a number of the Tamarack shafts in the month of February, 1902.

The suggestion that the sides of the shaft attracted the bobs and therefore caused the downward divergence, has been set aside by Professor McNair as wholly inadequate to explain the results. He estimates that such attraction,

if there be such, would amount to only a few hundredths of a grain, and would produce scarcely any sensible or appreciable effect upon the heavy weights suspended. He remarks that the common explanation is without foundation, though offered by many scientists and engineers.

The repulsion theory has been advocated by Professor Hallock, of the Columbia University; this theory, like the idea of side attraction, is rejected. The first hypothesis of Professor McNair was that of magnetic attraction of adjacent iron ventilating pipes; but when lead bobs were substituted for iron bobs, and practically the same results were manifest, the hypothesis was abandoned as inadequate to explain the divergence, though it did seem for a time to explain the torsion of the plane of the wires or the greater azimuth at the bottom. Upon using phosphor-bronze wires instead of steel piano wires, every idea of magnetic or other side attraction or repulsion was forced out of consideration.

Professor McNair's next hypothesis was that the downward divergence of the plumb-lines in the shafts was caused by air currents; and the arguments contained in his article dealing with the subject are designed to prove the theory true; but even this last resort fails to explain the phenomena; for after every precaution was taken to prevent circulation of the air in the shafts by closing up the top and shutting off the air from the pipes as completely as possible, there yet remained, in the final experiment of the series, a divergence of .018 of a foot, .216 of an inch—and this divergence was considerably less and nearer the calculated divergence of *gravic rays in the hollow globe*, than that obtained when the air in the shaft was in circulation. In order to accept this last attempt to explain the phenomena, one must conclude that the air currents should be constant in their action throughout a period of several months, which is beyond belief. But even today, the scientists differ

among themselves as to which theory noted above is the correct one.

If side attraction were the cause of the divergence, then of course repulsion and air currents must be left out of the question; if any one of the three "causes" operated to produce the results, the other two must be set aside. A scientific explanation must of necessity be consistent with itself and with all the facts observed; the lines diverged downward for the simple reason that *the earth is concave instead of convex*. Those who antagonize this conception should at least agree as to the causes of the results of the Tamarack Mine experiments—otherwise the people will ultimately learn to reject their conflicting conclusions as nothing more than wild and unfounded guesses.

There is yet a possibility of a still more startling series of experiments at the Tamarack Mines. In the foregoing experiments the plumb-lines were 12 to 17 feet apart and showed downward divergences ranging from .018 to .1 of a foot; but the tests we have in mind may be far more accurate, and hence more conclusive to our opponents; but it should be carefully noted by them that the experiments cited above were conducted by men having no relation nor sympathy with the Koreshan System. Neither did the Koreshan Scientists have anything to do with the tests instituted at Calumet in the second series of experiments. The distance between shafts No. 2 and No. 5 is 3,200 feet. It was the intention of the mining engineer to have the twenty-ninth level opened between the two shafts, a line suspended in each shaft, and measurements taken at the top and bottom. The calculated *downward divergence* of two perpendiculars 3,200 feet apart, is *8.22 inches* for the length of 4,250 feet; and we declare with confidence and certainty, that the two plumb-lines in the proposed experiment just outlined, will approximate this divergence.

Remarkable Changes in Scientific Beliefs.

Since the beginning of the Twentieth Century we have had the satisfaction of noting remarkable changes in the theories of the modern scientists—a rejection of old tenets and a near approach to conceptions entertained and taught in Koreshanity—conceptions and conclusions reached over thirty-five years ago by the Founder of the Koreshan System. The discovery of radium has done more to revolutionize the beliefs of modern scientists than any other achievement or work of scientists of the old school. Professor and Madame Curie have been instrumental in bringing before the world remarkable corroborations of Koreshan Physics; and from the basis of many experiments with the wonderful radio-active substance, such noted men as Lord Kelvin, Professor Lodge, and Professor Ramsay, have come to reject the basis of modern chemistry—that of the indestructibility of the atom. These men, with others noted in the field of research, are now holding to transmutation of substance as possible, and not only possible, but inevitable, since the emanations of radium show the presence of helium, which is a distinct element.

So startling have been the results of these disclosures of radium, that many leading minds have abandoned the doctrines of chemistry, and are now endeavoring to formulate a new system of chemistry or alchemy. The conclusion has been reached that the atom is not the smallest form of matter, but rather electrons, which exist in the borderland between matter and the intangible something they call electricity. It is now admitted that it is possible to make gold from baser metals, and to precipitate substances from rays of light; and that processes of radioactivity take place at all times in all substances—conceptions long before entertained and taught in the Koreshan System. The continual advocacy of Koreshan Universol-

ogy for thirty-five years, and a constant bombardment of the forts of fallacy, cannot but have their effect in the mental processes of scientific circles.

Professor A. Russell Wallace, the eminent naturalist and astronomer, has startled the scientific world by setting forth a conception of the universe at variance with the accepted theories of cosmology. He holds that the universe is limited; and one of his arguments in support of this conclusion is that all astronomers up to the time of Copernicus held that the universe was geocentric. In Prof. Wallace's conception, the earth itself is situated near the center of the universe. But the tendency of all modern astronomical speculation has been toward the very opposite of this view—to the unwarranted conclusion that the universe is illimitable.

A second argument used by Prof. Wallace is that if infinite space were filled with stars the firmament would be a continuous blaze of light as bright as the noon-day sun, whereas it is known that the average star-light is only one forty-ninth that of the moon. Prof. Wallace maintains that he has had the benefit of the whole mass of facts accumulated by means of powerful instruments of research, and affirms that he is not acquainted with any great inductive result of modern science that has been arrived at so gradually and so legitimately, by means of so vast a mass of precise measurements and observations, as his conclusion concerning the limitation of the universe and the central location of the earth.

Prof. Wallace further holds that the earth is the only habitable planet, that our own humanity is the only race in the universe; that the earth and the entire universe were created for man. Man, therefore, is the supreme thing. Prof. Wallace is not the only astronomer who holds to the limitation of the universe. Professor Newcomb, of Wash-

ington, has long entertained the idea that not only is the universe limited, but that *space itself has a limit*, though by what it is limited, or how the universe is environed, he does not pretend to say. In holding to the limitation of the universe in space, there is an approach to the Koreshan conception.

Both Professor Wallace and Lord Kelvin are emphatic in their denunciation of the atheistic conceptions of Spencer, Huxley, and Haekel, both holding that chance was not a factor in the origin of creation. Lord Kelvin asks, "Is there anything so absurd as to believe that a number of atoms by falling together of their own accord, can make a sprig of moss, a microbe, a living animal?" The universe cannot be explained on the basis that life sprang from "a fortuitous concourse of atoms." The world owes Professor Wallace a few tributes of respect for his repudiation of the idea that the universe is infinite, on the ground that the development of man is the object of the existence of the cosmos; and to Virchow for strenuously opposing the Darwinian theory of evolution.

And the future—what does it hold in store for all the conflicting fallacies of the times? There is but one end for them. Modern science is doomed because truth is true and its power is irresistible. There is no long withstanding the forces of such a revolution in the world of thought as that which now impends, which is now imminent. The remarkable changes of the last few years are but a suggestion of what is coming. Soon there will be an utter abandonment of the premise of modern astronomy, with all its absurd conceptions. The human reason will soon rebel against such vagaries of the imagination. The mind is seeking the tangible, the real, the true; and the demand will be met with the most unmistakable demonstrations in all the lines and avenues which appeal to human reason and admit of application to human life for the progress of the race.

Cause of the Variation of the Pendulum.

KORESH.

IT IS CLAIMED that the surface of the earth moves from west to east nearly twenty-five thousand miles in twenty-four hours. This is a solid body moving through space, according to modern science, at a rotary speed of over one thousand miles an hour, or more than sixteen miles per minute. Can any sane man imagine that a solid body with this rate of speed, surrounded by a thin atmosphere, could so carry its atmosphere with its momentum as not to produce a contrary motion of the atmosphere, while at the same time it would cause the rotation of an oscillating pendulum?

No one disputes the fact of the motion of the pendulum, as first observed by Foucault and recently experimented with by Flammarion. We might, however, question the uniform direction of the oscillating pendulum in a series of experiments. But allowing the experiment to be fair and the motion as reported, we would inquire, What causes such a phenomenon? Whatsoever the cause of the motion it must be considered with regard to two propositions. The first, the supposition that the earth revolves because the heavens *appear* to revolve; and the motion of the pendulum is taken as corroborative testimony to an hypothesis, a guess, which still hangs in doubt with the astronomers, for the reason that with howsoever much reinforcement you sustain a guess, it still remains hypothetical; and the astronomers will not stop seeking for still further corroboration, because they are still in doubt. We wish to assure our readers that the problem is not settled under the Copernican system.

The second proposition is, that the Koreshan Geodetic Survey has settled forever the fact that the earth is a concave shell, and that man inhabits the cellular sphere. If it could be proven that the earth rotates, then the pendulum would act the same on the inner as it would on the outer surface of a ball, were it the motion of the earth that caused it. It could not, therefore, affect the fact of the Cellular Cosmogony in the least.

According to the Koreshan System, the earth is comparatively stationary and the heavens are moving within the stationary earth. The sun is moving at the rate of about eighteen thousand miles in twenty-four hours. It is sweeping through space with this velocity and radiating its energies into the environing shell, in which there is a corresponding magnetic spiral motion. To this spiral motion of energy is due the rotation of the pendulum, and not to the motion of the earth. First, it will be understood that the pendulum is suspended from a support attached solidly to the body of the earth. Second, it will be noticed that the curve of the earth is practically the same at both extremes of the oscillation, the earth moving just as rapidly at one point as at the other. There could not be a calculable commensuration of difference either in time or space, at the two extremities, as to curvation or the time of longitudinal motion.

If the pendulum be swung from north to south and south to north at the start, it would be subject to the eastward motion of the earth, which, were the theory of the earth's rotate impression in relation to the pendulum ball true, the ball would apparently move toward the west, and with the opposite swing of the pendulum it would swing equally toward the west—the motion on one side balancing the other. This would be the effect if the phenomenon were the result of the earth's motion. How would it be

when the pendulum rotated around to the east and west points? The earth would be rotating toward the east, the pendulum swinging east and west. The earth is moving, according to the Copernican *hypothesis*, at the rate of sixteen miles a minute either with or against the ball, while it swings westward, and at the same rate with it when the ball swings eastward. If the earth by its rotation affects the motion of the pendulum enough to cause this rotation, why would it not make an appreciable difference distinctively marked, while swinging east and west?

The swinging of a pendulum could bear no possible relation to the earth's rotation, even if the earth were a ball rotating from east to west at the rate of twenty-five thousand miles in twenty-four hours. The question of the relation of the rotating pendulum of Foucault to the rotation of the earth is equal to the question: "If it takes a thousand bundles of shingles to shingle an opera house, how many pancakes will it take to shingle a meeting house?" The marvelous thing about this experiment, is that any man possessing any claim whatsoever to the title of scientific should accept this solution without asking the question, "May there not be some hypothesis for this motion as reasonable as, or more so than the hypothesis of the rotation of the earth?" If a pendulum were swung at the north pole, oscillating laterally over the plane of the earth's rotation, were there such a motion of the earth, the pendulum hung in space (not upon supports fixed solidly in the earth), there would be some sense to the proposition; as it is, it is the veriest nonsense, and later the "scientists" will laugh at their own folly.

Copernican Hypothesis in the Schools.

LUCIE PAGE BORDEN.

THE NOBILITY AND GRANDEUR of the Koreshan premise as it confronts the world, are apparent to those who are able to discern the need of the hour. The discoveries of modern investigators in the field of research have only plunged the whole body of so-called "scientists" into deeper darkness. The field of astronomical research has been ploughed, but no results have been found to compare with the extension of an air-line to test the contour of the earth's surface and determine in an unmistakable manner that the famous Copernican hypothesis has been superseded by a fact that is known.

What has been taught by the Koreshan System during the past thirty-five years comprises actual knowledge. It does not deal with conjectures nor find any pleasure in drawing base lines for triangulation, when the assumption is that the earth revolves in an orbit about the sun. The conspicuous absence of facts in the old system, shows how much time is wasted in searching the heavens, when the same amount of time put into the investigation of the earth's shape would show that it had never been satisfactorily tested until the Koreshan concept was put forth.

To understand the universe is the acme of human desire; for all questions of conduct would be solved by a comprehension of how much is involved in life. The discovery of the nineteenth century was made in 1870, when the actual proof of the Cellular Cosmogony was revealed by the intellect that had become fitted to involve the secrets of creation. Since that date there has been nothing of much importance to herald. Of course the application of forces

or energies, frankly admitted to be an impenetrable mystery in their essence, to the uses of life, does go forward without furnishing any conclusive proofs to guide the world to clearer conceptions of being. The electric light has not shown the nature of the electric fluid.

The whole question of putting modern physics into the hands of the young people in our schools and colleges, does not rest upon an assumption according to the ideas of modern educators. But when the subject of electricity is treated, it develops that nothing is known of it, *per se*. The most that a modern instructor can do is to explain the latest theory, prefacing his remarks perchance with the statement that nothing is absolutely known of the matter under discussion.

Chemistry has held a very important place in the college curriculum. Laboratories have been generously provided to facilitate the study of what was called a science. It has had to revise all its conclusions and to renounce its groundwork in the sight of the indestructible atom removed; and yet, the men who study this branch are not yet willing in more than a few cases to admit the truth of the "discarded science" of Alchemy. They are still trying to find out what has been authoritatively stated by Koreshanity ever since its introduction into the universe of life.

The same fundamental errors which distinguish chemistry, prevent biology from reaching its object. The origin of life, either primarily or proximately, is under discussion daily, without training the mind of the student to apprehend the facts of existence, because he is not taught to know God, in whom is life. The origin and destiny of man are completely misunderstood, and so long as these points are not clear, neither ethics nor the various branches which relate to man, can make any progress.

Geology is pivoted on the idea, thoroughly inculcated

by the exponents of the Copernican hypothesis, that the earth had a beginning. How far back that epoch should be placed is a moot point; but the educated men of this period in the world's history, think it was once bereft of the presence of man, because no human remains are found in certain strata.

Sociology as a science taught in the best colleges is really non-existent. The pattern for construction is wanting, because the solar system is not understood. The principle of organic unity shown in the cell with its center and environing walls, must be put forward to insure the orderly activity of society. With the fundamental error in social construction expunged, the students might be able to grapple with the labor question and the various branches of economics to some purpose.

Psychology is trying to ferret out the mysteries of modern spiritualism, and is concerned with the measurement of motory and sensory impulses. These are all necessary in their places, but the subject of the soul and the rapport between spirit, soul, and body, are too vast in their bearing to be put aside; yet the nature of the soul is still unknown. Metaphysics has no conception of the beautiful truths that are brought to light in the study of the brain under the instruction of Koreshanity, whose Founder has shown the intricate harmonies of cell and fibre, as used in the correlated organs of the mind.

The above are some of the reasons why modern education is defective in its instructions. The theorizing of the past has been put up in labeled packages to confuse the mind of the student. If nothing were taught without a groundwork of facts, the mind would not be furnished with old rubbish like an attic or lumber room. Education is the greatest possible attainment of life. It should never be disparaged; but that text-books should exist built upon theories and conjectures is a shame in a progressive age.

The Principles of the New Geodesy.

LUCIE PAGE BORDEN.

THE ORDINARY READER is not so familiar with the term geodesy as the surveyor, because the latter is in the habit of making use of geodetic instruments in the pursuit of his own vocation. These instruments are designed to aid the mechanic and the civil engineer in laying out public works and surveying large tracts of land, where it is necessary to introduce the question of the earth's curvature. It is quite enough for the ordinary reader if he be able to define the word geodesy, from its root meaning. Not so with the student of Koreshanity. He knows that the fundamental proposition of this cult calls for a more extended knowledge of the subject than is held by the casual reader. He is, therefore, required at the outset to acquaint himself with the application of the term. He knows that while he is studying Koreshan Science, it is one of the first requisites to understand what is meant by a geodetic survey.

The most interesting account of the authenticity of the claims made by Koreshan Science would be unintelligible to one who was not aware of the significance of the terms used. The New Geodesy has not departed from any of the known facts of mathematics. It simply rests upon the assertion which nobody can deny, that the chord of an arc is not a tangent. It is certain to all who know them, that the Koreshan geodesists were sincere and indefatigable in their efforts to ascertain whether the direction of the earth's curvature is correctly stated by the ordinary works on surveying.

It was necessary to invent an apparatus which should be capable of determining whether a line extended hori-

zontal to a plumb vertical would prove to be a tangent or a chord. The ordinary surveyor takes it for granted in all his measurements that the surface upon which they are drawn is convex. The Koreshan does not incline to work from an assumption. His method is to use the new apparatus which is perfectly simple, to settle a question which the ordinary surveyor takes for granted. It becomes necessary in every extended geodetic operation to devise some method of constructing an instrument to extend a right line. The ordinary surveyor uses the theodolite or engineer's level, and does not understand why there must be an allowance made for perspective foreshortening. He is actually obliged to allow two or three inches to the mile for this factor, but he puts it down as an example of refraction. The Koreshan does not trust to any optical instrument, but tries to make his line absolutely straight by the use of the mechanical principle of right angles.

The civil engineer knows that when he has levelled his telescope or transit instrument, and trains it on his pole a mile away, he will find that the altitude of the cross hair is five or six inches below the height of the pole. Believing that the earth's surface is convex, he is puzzled to know why the difference should not be eight inches to agree with the calculated estimate. He considers the discrepancy is due to refraction, and claims that he is obliged to allow two or three inches to the mile for this optical factor. The Koreshan geodesist understands the law of perspective foreshortening, and differs from the engineer in his theory of refraction; but the Koreshan prefers to eliminate optical factors and to run a mechanical line.

So much for the differences between the old geodesy and the new. The most intricate problems of surveying are not unnoticed by the latter, but the outlook of the New Geodesy is so wholly dissimilar to that of the old, that it will be obvious why theoretical problems raised by competent surveyors would be of no interest to the student who has proved to his own satisfaction that the basis of their work is an erroneous assumption.